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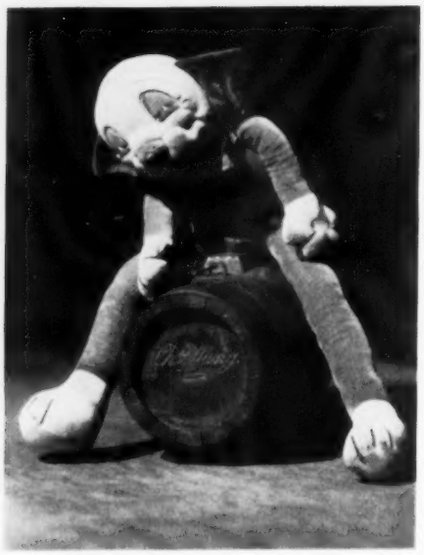

Business Is Better

Many of our good customers, during the last short period, have frequently inquired regarding our business. They have indicated that they consider that we may serve as a barometer because we take care of the current needs of so many manufacturers and builders in every line of business.

We are not at all sure that we are an infallible barometer, but we are pleased to be in a position to state at this time that business is definitely better.

Industry for the most part has learned that it does not pay to carry large stocks of materials in times like these when volume, design, etc. are so uncertain. They also find it to their advantage to keep capital liquid for the operation of their business and purchase their steel just as they need it for current operation.

Our own stocks naturally must always be and are at the present time complete. Whether you need a car or a bar, your order will receive personal attention and be shipped immediately.

Bars	Sheets, Full Finished	Strip Steel	Babbitt Metal	Concrete Reinforcing
Structurals	Refined Iron	Rivets, Bolts	Tool Steel	Firmtread Plates
Rails	Screw Stock	Boiler Tubes and Fittings	Alloy Steel	Small Tools
Plates	Turned Ground and Polished Shafting	Welding Rod	Stainless Steel (Allegheny Metal)	Machinery, etc.
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STEEL-SERVICE

Volume 92 Number 17

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

FOUR years has the iron and steel industry stubbornly resisted depression, four years has it fought doggedly to preserve corporate identities, only to be confronted now with a probable fusing of the industry in a planned economy (p. 20). When the President April 19 took the United States off the gold standard he embarked on a course whose success depends upon the follow-through, for manipulation of the monetary standard involves manipulation of industry—control of production, prices, wages—which the administration already is arranging (p. 12). Iron and steel will co-operate for the common cause, but it views a program of control, probably through advisory boards as in wartime, with a critical eye.

Iron and Steel Beat Inflation to the Rise

First tangible consequence of the new monetary standard and the launching of an inflationary program is a sense of elation accompanied by a flurry in demand and a rise in commodity prices. Iron and steel markets the past week have appeared freshly energized (p. 41), but actually the momentum was generated prior to the President's announcement. Steelworks operations, rising to 25 per cent (p. 11), are the highest in 13 months. Scrap quotations have rocketed to the point (p. 54) where dealers avoid sales. Strip will be advanced $3 per ton (p. 47), with a new pricing method for Detroit (p. 14). Not in months have consumers generally been so avid to cover ahead, and pre-depression activity has returned.

Scrap the Invigorator of Foreign Trade

International markets also are quickened. . . . Exports of iron and steel from the United States in March, at 80,567 tons, were the highest in 20 months (p. 15); imports rising only mildly to 22,114 tons improved the favorable balance of trade. Scrap continues to underlay much of this improvement, Japan taking 32,549 tons in March and Italy 14,780 tons. . . . Japan and China are antagonists in Seattle (p. 59) as in the Far East, the former bidding up the steel scrap market and the latter offering $40,000 for ship bottoms for scrapping. . . . Adjustments in foreign trade, necessitated by the new monetary standard, are tending to lessen competition in the East in pig iron (p. 55) and iron ore (p. 50).

Would Put Institute Behind Steel House

Of all major outlets for steel, the automobile industry thus far has expanded its requirements the most rapidly (p. 17), a spring sales drive of prosperity intensity being now under way. . . . But offering great potentialities is steel for housing, formation of a National Steel

Five thousand tons of pipe carry water from the Silvretta glacier in the Austrian Alps to a hydroelectric power station supplying current to parts of Austria, Switzerland and the Rhineland

House institute being proposed (p. 13) to coordinate efforts and merchandise the idea. . . . The earthquake area of southern California is being studied (p. 28) to determine the type of steel construction most resistant to shocks. . . . Structural steel awards last week, 14,483 tons, triple those of the previous week (p. 48). Topping prospective work is 150,000 tons for a New York vehicular tunnel, for which an R. F. C. loan nears. . . . Steel ingot capacity of the United States as of last Dec. 31 stands little changed at 68,199,176 tons (p. 16), but pig iron is off to 50,455,975.

Devise New Methods for Gaging Heat

In commercial types of industrial furnaces where the charge is large with respect to the furnace it has been difficult to determine the coefficient of transfer of heat from the furnace to the stock, but a method for calculating rates of heating has been devised (p. 23) following close study of a number of installations . . . . A photoelectric pyrometer for measuring temperatures of incandescent bodies indicates (p. 32) continuously or records temperatures from 1500 degrees Fahr., upward. . . . A new method of quoting refractories, whose business is resisting heat, includes (p. 44) malleable bung brick.

Exceeding Elastic Limit Lessens Strains

For the elimination of stretcher strains in steel sheets, the bane of automobile body and stamping manufacturers, roller leveling has been widely adopted. Two methods of roller leveling have found wide use, and now these methods have been incorporated into one (p. 26). In the new processing machine, flexing of the metal is carried further beyond the elastic limit than before, thus affording greater freedom from stretcher strains. . . . Sheet production is doubled by the use (p. 34) of automatic tilting tables on the roller's and catcher's side, permitting the catcher to feed the stock through the rolls to the roller's side.

Cannot Abuse New Type of Galvanized Wire

No amount of bending or twisting or corrosive influence can dent the armor of a new kind of galvanized wire, coated by a new electric process (p. 37). It supplements, rather than supplants, hot-dipped galvanized wire. . . . Dross circulation in the bath of spelter is arrested (p. 34) by introducing all heat above the dross line of galvanized pots. . . . An inch-millimeter ratio of 25.4 has been approved (p. 25) as an American standard. . . . Grain size is more important than the chemistry of the steel in the manufacture of gears, states (p. 28) an investigator, who finds coarse-grained gears more ductile and easy to machine.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

German Industrialists Protest "Propaganda"

To the Foreign Business Friends and Agents of German Engine Works:

As the head association of all German Engine-Works we consider it our duty to call your attention to the fact that a part of the newspapers of your country have published accounts of cruelties and atrocious deeds, said to have been done to Jews of German nationality by followers of the National Socialist party.

We and all our associated firms are astonished and disgusted with this propaganda against Germany. The news of cruelties, murdering of Jews, men and women, etc., are communist lies from beginning to end.

Foreigners who happened to be present during the days of the "National Rise" in Germany will be of one opinion with us that it was accomplished with absolute discipline. Everybody knows that nobody in Germany was really stopped or hindered in his business and that violations of personal rights were strictly reprimanded.

All declarations the German government has issued in the meantime show that the government will provide for order, and the boycott movement of Jewish shops here will not influence this in any way. It is the indignation of the German population against the slander of National Germany which has given rise to this movement. As soon as this foreign slander propaganda and boycott against Germany has ceased, the boycott movement here will be stopped.

No foreigner in Germany shall be subject to even the slightest difficulties in personal or business matters. On the contrary, the government makes a special effort to protect foreigners living in or visiting Germany.

Verein Deutscher Maschinebau-Anstalten
Berlin, Germany

A Good Word for Courtesy in Industry

To the Editor:

It seems a long while since I have seen anything favorable said about American industry. And I have just been the recipient of an unusual business courtesy.

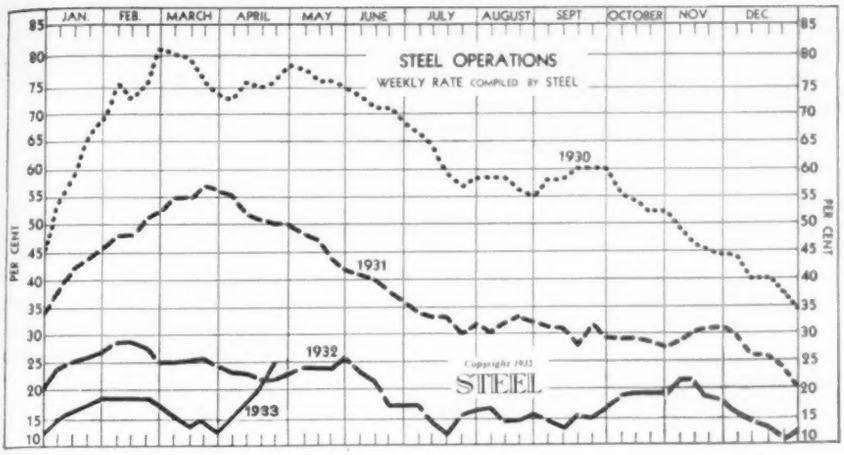
In connection with the activities of a small group of amateur mechanics, I recently wrote to the manufacturers of a preparation for protecting the surfaces of metals from corrosion. I was told that the product I inquired for is no longer made but that the company would have its laboratory make a quantity for me. Today, I received a substantial shipment, free of charge.

Twenty years of work as a financial reporter, etc., have enabled me to know the high degree of organization, close control of costs and strict economy of operation required of an industrial unit to survive under modern conditions. I can therefore appreciate what this favor involves in the way of trouble and expense.

This is the latest and most important of a long series of accommodations granted by industrial companies in response to queries which must have been troublesome and trifling. Many times, overworked engineers have taken the trouble to write long letters containing valuable information about their companies' products and busy executives have granted interviews which were purely favors to me.

The answer is, of course, that these actions create good will and I want to go on record as appreciating the length of vision which recognizes that fact.

ALFRED W. MILLER.
E. C. Van Dyke Inc.
New York



25% Steel Rate Is 13-Month Record; 27% Seen This Week

ON THE crest of sharply rising demand for practically all products, steelmaking operations in the week ended April 22 expanded 4½ points to 25 per cent, and indications are that this week the industry will push up to 27 per cent, or the highest since the first week of February, 1932.

Last week was significant for being the first time since the depression set in that any week's rate exceeded that for the corresponding week in the preceding year. In other words, the steelmaking lines crossed, as evidenced by the above chart. It is also noteworthy that the steel rate is rising in April, contrary to the experience of 1932 and 1931.

Finishing mills have expanded even more rapidly than raw steel, because inventories of the latter are being whittled down in preference to relighting open hearths, in some instances. Improvement is well scattered over all districts.

Detroit, at 38 per cent, continues the most active district, as one plant there is operating 100 per cent. Next is Cleveland at 36 per cent, Buffalo at 25, Chicago at 23½, Youngstown at 23, Pittsburgh at 21, Birmingham at 20, eastern Pennsylvania at 14.

Cleveland mills will be up to 41 per cent this week, Pittsburgh and Chicago will also record further gains, with schedules in other districts unsettled.

Tin plate at an average of 50 per cent leads all commodities.

Pittsburgh

Average of ingot melting rates in this district was 21 per cent last week, up three points, and for this week, a gain of one point to 22 per cent is expected. Rate of a leading mill here is the best of any of the producers and was 24 per cent all week. Smaller independents are averaging 19 to 20 per cent. The number of active blast furnaces continues to be 8 out of 53, with producers' stocks of pig iron adequate and the prospect of additional steelworks stacks being lighted not imminent.

Cleveland

Steel ingot production here for the week ended April 22 advanced 4 points to 36 per cent. The Corrigan, McKinney Steel Co. lighted a fourth unit, and later in the week a fifth. Hence, at the close of the week the actual rate here was 38 per cent. There is a strong probability that this rate will be lifted to 41 per cent the current week. Otis Steel Co. continues with five; American Steel & Wire Co. with three. The latter's open-hearth operations here may be discontinued May 1, due to the shift to Lorain as the source for steel. The Corrigan, McKinney company lighted a second blast furnace stack April 20.

Buffalo

A gain of six points last week put the steel rate here up to 25 per cent, a level which probably will be held this week. Nine open hearths were active all last week and are scheduled to continue this week.

Birmingham, Ala.

Due to resumption of the rail mill of the Tennessee Coal, Iron & Railroad Co., steelworks operations here increased 7½ points to 20 per cent last week, but this week will be down to 15.

Philadelphia

Eastern steelmaking operations have advanced 1½ points to 14 per cent for the week ended April 22, with a further increase probable this week.

Detroit

With all six open-hearth furnaces at the Great Lakes division of National Steel Corp. operating and all 10 Ford open hearths down, the steelworks rate for the Detroit district continues at about 38 per cent, highest for any district in the country.

Youngstown, O.

A 4-point rise put steelmaking operations here up to 23 per cent last

Operating Rate of the Steel Industry, by Weeks

All figures except the monthly open-hearth and bessemer ingot totals of American Iron and Steel institute are percentages. Estimates are based upon weekly reports from the Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Ala., and Buffalo districts, which are weighted. Weeks end Saturday.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	Steel's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.	22	25	26	27	28.5	25.7	1,454,309	25.86
Feb.	28.5	27	25	25	....	26.4	1,450,648	26.83
March	25	25.5	24.5	23	....	24.5	1,403,723	24.04
April	23	22	22	23	24	22.8	1,233,603	21.94
May	24	24	25.5	23	....	24.1	1,101,994	19.60
June	21	17	17	17	....	18.0	893,899	15.90
July	14.5	12	15.5	16.5	16.5	15.0	790,055	14.61
Aug.	14.5	14.5	15.5	14.5	....	14.7	829,236	14.20
Sept.	13.5	15.5	15	17	....	15.3	971,365	17.28
Oct.	18	19	19.5	19.5	19.5	19.1	1,064,598	18.93
Nov.	21	21	19	17.5	....	19.6	1,010,894	17.98
Dec.	16	15	14	12	13	14.0	843,244	15.00
1933								
Jan.	15.5	17	18	19	....	17.4	1,009,483	17.84
Feb.	19	19	19	17	....	18.5	1,066,339	20.41
March	15	13.5	15	14	15.5*	14.6	885,913	15.08
April	17.5	20.5	25	..	....	....	.....	.....

*Week ended April 1

week, due largely to automotive releases. An advance to 24 per cent is expected this week. Twenty-seven out of 83 open hearths are active. Marked increases in activity are reported at Canton and Mansfield, O.

Chicago

Steelmaking capacity was engaged 23-24 per cent last week, compared with an average of 20 per cent for the week preceding. This week the rate will probably show a further slight gain. Finishing mill operations are expanding faster than open hearths are being put on. Five steelworks and one merchant blast furnace are operating.

Price, Wage, Order Control Involved In Roosevelt Industrial Dictatorship

AN ADVISORY board of the iron and steel industry to "sit in" with Secretary of Labor Perkins, and perhaps also Secretary of Commerce Roper, and allocate orders, set minimum wages, fix prices and otherwise level off the industry is a likely prospect.

It is accepted in Washington that President Roosevelt has set up for all industry the following specifications: Orders to be spread out over all units of an industry; work to be similarly spread out over labor; a short work week, 30 hours being the probable minimum and 40 hours the maximum; determination of fair prices.

To Suspend Antitrust Laws

It is also known that the President believes he has authority to suspend the antitrust laws and control commodity prices. He has explained in detail, for instance, that he believes city real estate prices in 1929 were too high, at the same time that agricultural prices were too low. He hopes to artificially control prices, raising and lowering them separately as the situation warrants.

The vehicle for controlling industry apparently will be the 30-hour week bill which the senate, 51 to 32, refused to reconsider and is now before the house. A woman—Secretary Perkins—will dominate whatever control is granted. Public hearings are scheduled to be held this week, and protests from industry, thus far comparatively quiescent, are expected to be vigorous.

The speculation as to how this dictatorship over industry will be enforced centers on the assumption of wartime powers by the President, in much the same fashion that he took control of the banking situation immediately after his inauguration. The advisory boards, which thus far are only talk, might resemble the war industries board.

Unless done in arbitrary fashion, the administration would require the co-operation of each industry to arrive at a price fair to the buyer and remunerative to the producer. The matter of "just and reasonable" wages may be a knotty one. Quotas for manufacturers of steel and sugar are one thing, for example; if the public favors certain makes of automobiles over others, how to spread this demand, is another thing.

A confidential draft of the industry control bill is said to omit reference to a minimum wage, in order to avoid unconstitutionality, and to provide for boards with labor, public and industry representation. The iron and steel industry is not believed in Washington to have reduced wage rates as much as the automotive industry, and hence is under less suspicion.

Among Pittsburgh district interests which have protested the 30-hour week bill are the West Leechburg Steel Co., Edgewater Steel Co., Follansbee Bros. Co., Central Tube Co., A. M. Byers Co. and General Cable Corp.

8-Hour Shifts Trouble

The effect of a 30, or even 40, hour work week on an industry where conditions necessitate three 8-hour shifts is obvious. Structural steel fabricators point out that the laying out of work and setting up processes as well as foremanship are continuous and could not economically be shifted from one crew to another.

Reorganization of the railroads is not lagging. There is talk here that the railroad co-ordinator, which it is expected the President will appoint to have direct control of the new railways, will establish joint purchasing agents for the buying of steel rails and all other supplies. It is suggested that there may not be a central purchasing office for all of the roads but that there may be four or five divisional purchasing agents to be located in various parts of the country.

The plan for raising commodity prices, leveling business off within industries, fixing remunerative prices—in effect, rationalizing industry—and for reorganizing the railroads ties in with the legislative "controlled inflation" bill introduced in the senate April 20. This bill provides for acceptance of silver in partial payment for war debts, and gives the President wide powers for devaluing the dollar and pushing fresh currency into circulation.

□ □ □

Reconstruction Finance Corp. has authorized loans of $300,000 to Michigan City, Ind., for a water system, a 500,000-gallon steel tank and replacement of old mains; $40,000 to Crestline, O., for a water system, including cast iron pipe; $650,000 for a market at Muskegon, Mich., and $13,000 to Commerce, Tex., for a water system, steel tank and cast iron pipe.

□ □ □

J. Carson Adkerson, president, American Manganese Producers' association, has asked the interdepartmental board of contracts and adjustments to specify the use of domestic manganese in steel for federal buildings. Representatives of the steel industry will appear April 24 to present their side of the case.

Raymond Co. Marks 50th Anniversary

RAYMOND MFG. CO., Corry, Pa., is celebrating its fiftieth anniversary this year. Incorporated in 1883 to manufacture a line of novelties, of which springs and spring wire were constituent parts, it developed special methods of spring manufacture. The company's springs being in demand for other lines, the novelties were entirely discontinued by 1906, since which time the company has concentrated on the production of high-grade springs, wire forms and small stampings.

The company was a leader in the manufacture of bicycle saddle springs, beginning in 1895, and during the heyday of the bicycle made most of such springs used in the United States. Progressing with the times, the company also participated in the development of valve springs and other springs for automobiles and airplanes.

Raymond springs were equipment in the engines of the Curtiss navy seaplanes which won the Schneider trophy in England in 1923, the Curtiss navy planes which won the Pulitzer trophy at St. Louis in 1923, and the St. Louis Robin plane which, in 1929, broke all records for sustained flights.

M. M. Raymond, founder of the company, died in 1909, his son, F. M. Raymond, succeeding him as president. F. E. Whittlesey, general manager, has been identified with the company since 1891. The first unit of the present plant was erected in 1906, with additions in 1910, 1913, 1918 and 1925.

We Propose

A National Steel Home Institute

BY CLAYTON GRANDY
and
GLENN W. BITTEL

WE PRESENT the accompanying article in the belief that the proposal for co-ordinating the efforts of the various interests participating in the steel house movement is constructive in principle. We will comment editorially on the plan in a later issue.

The authors have had a combined experience of 15 years as trade association executives in furthering public acceptance for a competitive building material. They were responsible for the promotion of one of the earliest types of steel frame-masonry dwellings, have been closely identified with the introduction of various new types of building construction and from the first have been in a favorable position to observe and study the design, engineering, code, promotion and sales problems attending the application of steel to residential construction.

—THE EDITORS

THE history of most industries, particularly those in the construction field, has been that after stumbling over hurdles and skinning shins, an association has been formed by the afflicted interests to heal the wounds and to bring order out of chaos.

What will be the history of the new industry which will arise through development of the steel house? Will the chaos, confusion, and cost which attended these precedents in other industries be sufficient warning of the practical economy of establishing a new order of co-operation among steel manufacturers? Or, must the continuous benefit which would be derived from associated leadership and control be subordinated to the momentary advantages which individual concerns erroneously believe will result from sharply drawn competitive activities?

It should be clear that there will be no advantages, (beyond expensive experiences), for anyone until there is some authority for practice and procedure in steel house construction. However competent, the sponsorship of an individual company does not constitute such authority. Its insufficiency already is proved by the unsatisfied demand from many quarters, even now, for authentic guidance.

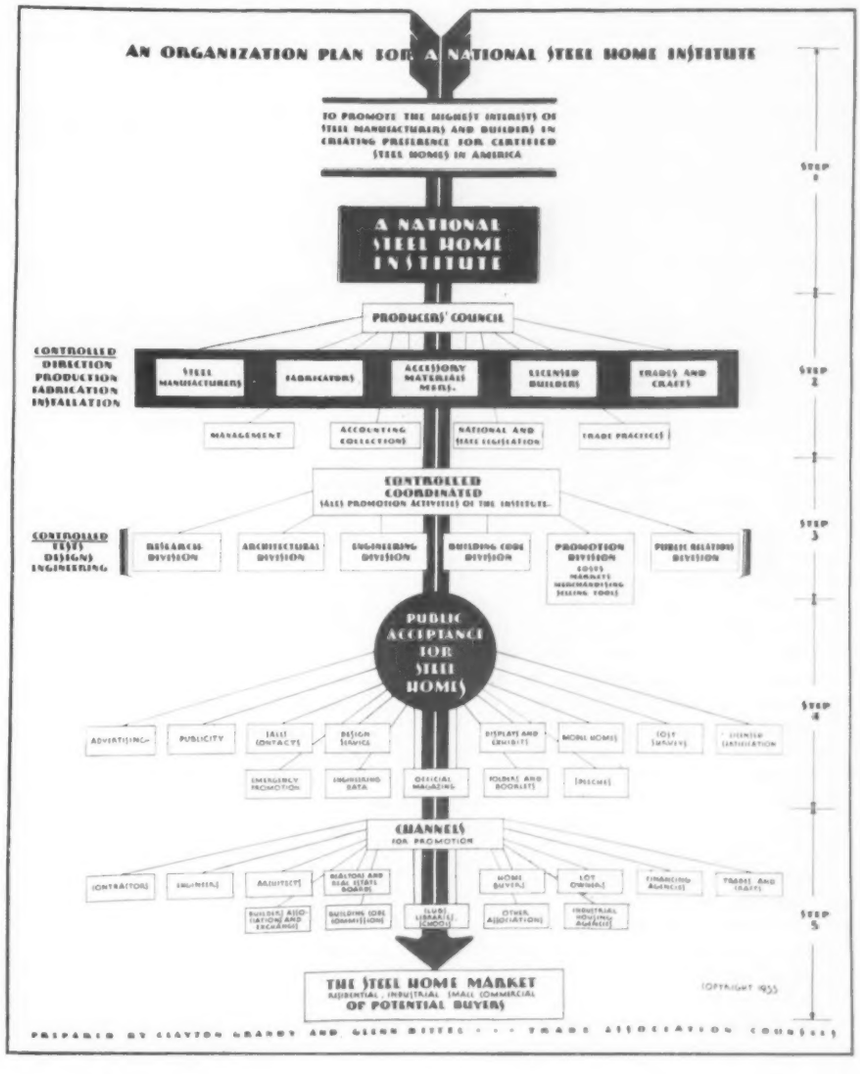
Adequate profits for steel producers, fabricators, erectors, and accessory equipment manufacturers will depend upon the elevation of the steel house from its present position before the American home buyer as a housing novelty to its possible heroic status as an industry and a new market.

The purpose of our proposal is to provide a rallying point around which those who visualize profit in creating that market may join forces to exercise a logical influence on the problems of control, direction, and sales promotion. Every avenue of approach seems to lead to the conclusion that there can be no steel house industry until national authority for its existence is established—the authority of a Steel Home institute.

Of all the problems facing the steel producers, fabricators, or builders, that of winning the public over to steel's advantages in beauty, comfort, permanence and relative cost, is second only in importance to the immediate need for authoritative data on design and construction to make those advantages available to the public.

Today the public's estimation of the availability of steel houses, as suggested by existing types, is decidedly ambiguous. This is not unexpected by those who see that the right of the steel house to the serious consideration of prospective home buyers will be established slowly, if at all, if left to the initiative of the builder alone, as is now largely the case.

When, in a single season, within the limits of a single city, four distinct types of steel houses are exuberantly presented by their inventors, without noticeable buying reactions, some would think to find in this situation grounds for condemning either the houses or their builders. But to draw such an inference would be to lose sight of the custom-



ary reactions of cautious buyers when they find no established or accepted standards of construction or authoritative sponsors. It simply emphasizes the danger to the new industry of depending for success on the unrelated efforts of isolated experimenters, and magnifies the fundamental importance of organized research.

Natural interest which brings curious crowds to view experimental houses may be no safe measure or prophecy of the homes they will eventually buy. Despite the fervid newspaper acclaim met with in some instances, a consensus among actual buyers today reveals hesitant, when not negative, reactions to the purchase of steel houses. Not because the intrinsic qualities of steel are seen to be undesirable as a building material, but because the diversity of designs, methods, opinions, and premature publicity have prejudiced the inherent and recognized advantages of steel with doubt and confusion as to its availability for houses.

The public concedes that steel undoubtedly will occupy a significant place in future house construction, but builders today are hazy as to what that place will be. Financing agencies likewise are not ignorant of the confused state of affairs, and until there are some standards of steel house construction, design and practice acceptable to the industry, and projected by authorities worthy of public confidence, there can be small hope of national acceptance for this material.

How Capitalize Opportunity?

Nevertheless, steel producers and manufacturers of accessory materials are generally aware of the tremendous scope which home building adds to the usefulness of their materials, and really believe in the future of the steel house as a logical and profitable field for the extension of their market opportunities.

How to capitalize this opportunity in a measure commensurate with its richness and importance is not so clear. It may be offered glibly that the sales problems of all building materials for wall construction are similar. True enough. But the problems of creating acceptance for conventional materials whose use is traditional, are not necessarily the problems confronting steel, whose use in house construction at the moment is a novelty to builder and the public.

Moreover, the evaluation of existing design data, tests of floor and wall sections, consideration of many patents covering various features and accessories, the introduction of new code provisions, etc., all present unique problems for steel requiring varying degrees of original research, to say nothing of the parallel sales and contact problems peculiar to every building material.

In the absence of miracles, therefore, we see this field yielding slowly, if at all, to any but a well organized, albeit competitive, effort to cultivate it; and the time to begin that cultivation is now, when the use of conventional materials is at its lowest point, with a buyers' market looking earnestly for a Moses to lead it to better homes at lower cost.

From this brief appraisal of the scene developing around the promotion of steel houses as now constituted, we begin to recognize the urgent importance of undertaking basic correlating activities affecting the evolution and evaluation of steel house design and fabrication.

A national steel home institute, or some comparable bureau or agency, which contemplates co-ordinating the efforts of producers, fabricator, builder, crafts, and accessory interests, and the solution of the sales and promotion problems incident thereto, is a logical assumption.

A comparable inference may be drawn, likewise, from the picture which concerns only the immediate interests of the manufacturers: Witness the number of experimental structures in various stages of design, or erection, today by several steel companies, fabricators, or builders, each proceeding independently; the widespread activity of other manufacturers to adapt their materials and products, and to invent others, for use in steel homes; the building of special machinery to fabricate steel wall and floor sections, frames, doors, etc.

Will the structural characteristics of these experiments represent types which the industry will desire to support? Are the shapes and forms which these machines will produce certain to be satisfactory generally to the industry? To the others involved in their use and application with other materials?

Is the future of the steel house to be predicated entirely on the "cut-and-try" methods of isolated experimenters? Or, will the necessary evolutionary processes required to

(*Please turn to Page 50*)

New Delivered-Detroit Price on Hot Strip To Level Off Delivery Charges

FOLLOWING some eight months upon the change in selling steel bars in the Detroit district, the hot-rolled strip steel market has taken a similar course.

Henceforth, strip steel will be sold on a delivered Detroit district basis. This will be identical with the change in the method of merchandising bars which occurred last summer.

Considerable uniformity in delivered prices of hot-rolled strip steel is confidently expected to result. The method by which delivered prices will be quoted does away with consideration of the various transportation costs of strip from outside mills into the Detroit district.

For instance, heretofore consideration of whether it be truck, rail or water delivery or a combination of any of the three, had been considered in selling strip steel on, say, a Pittsburgh base. The advantages of one means of transportation over another resulted in inequalities in the delivered strip price and the advantages a lake mill might have, for example, were often passed along to the consumer.

Under the new selling plan, inland strip mills such as in Pittsburgh can meet on equitable terms the prices which lake producers or even the Detroit district strip producers have been making to consumers of strip.

It seems likely that this change in selling method will elicit the approval which the change in selling bars last summer did. Today the bar market in Detroit is relatively more stable than strip steel, sheets or other important automotive steels.

The price at which strip will be sold will still nominally be based on Pittsburgh or Chicago basis and to this will be added a differential, not yet determined, of $2 to $4 a ton. Of course, if prices are to be net delivered, the determination of this differential will be one gaged largely by the present market in that consuming district.

Nevertheless, at the same time the strip steel trade understands that a significant advance is to be announced on both hot and cold-rolled strip within the next week. This advance has not been as yet decided upon but may be as much as $3 a ton.

Other than the fact that many sheet mills are producing strip plus the fact that strip steel has been under greater price deflation than carbon bars, there is no reason why strip, especially the narrower sizes, should be sold at less than bars in flat sections. Under the quoted prices today, strip steel at 1.45c, Pittsburgh, is about $3 a ton under bars at 1.60c base, Pittsburgh.

March Steel Exports Best In 20 Months; Imports Also up

AIDED by the sharply rising trade in scrap, the volume of United States foreign trade in iron and steel rose sharply in March, according to figures of the iron and steel division of the bureau of foreign and domestic commerce. Exports reached a total of 80,567 gross tons, highest for any month since July, 1931, and exceeding exports of March, 1932, by a margin of 60 per cent. March exports exceeded those of February by 26 per cent.

Imports at 22,114 gross tons were the highest since December, 1932, but were only 54 per cent of imports in March, 1932.

Exports for first quarter were 70,145 tons, or 53 per cent, greater than in first quarter of 1932, scrap shipments being the greatest factor in this advance, making a gain of 430 per cent. Imports were 35.5 per cent below those of first quarter of 1932, due principally to reduced receipts of pig iron, merchant and concrete reinforcing bars.

Japan, because of large shipments of scrap, continued in first place as recipient of exports from this country, 32,549 tons of a total of 33,761 tons to that country being scrap. Italy also took little but scrap, 14,780 tons of total purchases of 15,062 tons being scrap. Poland, with total imports from this country of 4328 tons, took 4326 tons of scrap. Canada's imports from this country were widely diversified in a total of 5534 tons.

Belgium supplied more of the month's imports than any other country, 5111 tons, including 1442 tons of shapes, 1180 tons of merchant steel bars, 974 tons of sheets and 842 tons of hoops and bands. India was second with 3949 tons of pig iron, and Sweden next with 2803 tons of pig iron and 432 tons of wire rods.

Imports, which had declined for three consecutive months, turned face in March and gained 2336 tons over February. The largest increases were in ferromanganese, which was up 1196 tons, pig iron 898 tons, and structurals 571 tons. Imports for first quarter, 1933, were only 63,754 tons, which is 35.5 per cent under first quarter of 1932. No items made special gains but noteworthy declines were made by pig iron, 9758 tons, concrete reinforcement bars 8051 tons, merchant steel bars 5559 tons, structural shapes 3798 tons, and ingotes and blooms 1824 tons.

Iron ore imports were many times greater in March than in February, the total of 113,272 tons including 75,050 tons from Norway, 22,000 tons from Cuba, 16,200 tons mined in Soviet Russia and 22 tons from the United Kingdom.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1933 Imports	1933 Exports	1932 Imports	1932 Exports
Jan.	21,892	56,720	31,053	40,660
Feb.	19,748	63,936	26,738	40,492
March	22,114	80,567	41,031	49,927
3 mo.	63,754	201,223	98,822	131,078
April	.....	.....	36,339	58,118
May	.....	.....	39,751	80,477
June	.....	.....	34,494	52,081
July	.....	.....	18,005	52,558
Aug.	.....	.....	23,623	32,955
Sept.	.....	.....	29,241	36,038
Oct.	.....	.....	33,693	41,226
Nov.	.....	.....	34,924	56,041
Dec.	.....	.....	29,390	54,118
Total	.....	.....	378,282	594,691

ORIGIN OF MARCH IMPORTS

Gross Tons

	Iron ore	Pig iron	Manganese ore	Ferromanganese
Norway	75,050	.....	.....	585
Russia	16,200	.....	.....	.....
United Kingdom	22	.....	1,328	55
Cuba	22,000	.....	.....	.....
Germany	.....	100	.....	361
Netherlands	.....	2,412	.....	.....
Sweden	.....	2,803	.....	.....
Canada	.....	50	.....	1,033
British Indna	.....	3,949	.....	.....
Dutch E. Indies	.....	.....	291	.....
France	.....	.....	.....	8
Italy	.....	.....	.....	29
Total	113,272	9,314	1,619	2,071

	Steel ingots	Steel scrap	Steel bars	Cast iron pipe
Germany	10	.....	126	.....
United Kingdom	1	.....	30	.....
Norway	4	.....	1	.....
Canada	.....	491	2	.....
Austria	.....	.....	1	.....
Belgium	.....	.....	1,180	.....
France	.....	.....	79	.....
Sweden	.....	.....	82	.....
Czechoslovakia	.....	.....	5	.....
Japan	.....	.....	.....	10
Total	15	491	1,506	10

IMPORTS OF IRON AND STEEL PRODUCTS INTO THE UNITED STATES

Gross Tons

Commodity	March 1933	Feb. 1933	March 1932
Pig iron	9,314	8,416	18,829
Sponge iron	.....	53	51
Ferromanganese, spiegeleisen	2,071	875	1,557
Ferrochrome	.....	5	.....
Ferrosilicon	.....	.....	.....
Scrap	491	204	507
Other ferroalloys	.....	.....	.....
Steel ingots, blooms, etc	15	53	368
Concrete bars	303	182	3,189
Hollow bar, drill steel	74	74	98
Merchant steel bars	1,506	1,812	3,529
Iron slabs	.....	.....	.....
Iron bars	17	21	41
Wire rods	1,017	918	973
Boiler and other plate	15	11	5
Sheets, skelp, saw plate	1,042	1,042	1,566
Tin plate	87	20	2,529
Structural shapes	2,168	1,597	2,538
Rails and fastenings	52	78	72
Cast iron pipe, fittings	10	.....	.....
Welded pipe	435	353	478
Other pipe	127	61	265
Barbed wire	799	1,100	1,551
Round iron, steel wire	420	173	211
Telegraph, telephone wire	.....	.....	1
Flat wire, strip steel	71	60	59
Wire rope, strand	116	137	146
Other wire	116	63	23
Hoops and bands	1,077	1,751	1,454
Nails, tacks, staples	620	558	930
Bolts, nuts, rivets	11	21	7
Horse, mule shoes	36	24	4
Castings, forgings	99	91	50
Total	22,114	19,748	41,031

EXPORTS OF IRON AND STEEL PRODUCTS FROM THE UNITED STATES

Gross Tons

Commodity	March 1933	Feb. 1933	March 1932
Pig iron	105	192	175
Ferromanganese, spiegeleisen	.....	.....	.....
Iron and steel scrap	57,522	38,141	13,256
Ingots blooms, billets, slabs, sheet bars	154	4	186
Bars, iron	49	21	68
Bars, steel	1,223	1,390	1,365
Bars, alloy steel	165	45	327
Wire rode	148	2,035	2,733
Boiler plate	25	89	66
Other plate, not fabricated	154	428	1,171
Skelp, iron or steel	83	238	2,319
Iron sheets, galvanized	33	34	182
Steel sheets, galvanized	2,563	1,539	2,513
Steel sheets, black	2,277	1,961	3,135
Iron sheets, black	125	154	242
Strip steel, cold-rolled	541	473	605
Hoop, band and scroll iron or steel	735	959	1,522
Tin, terne plate	3,394	2,905	2,336
Water, oil, gas, other tanks, except lined	113	24	557
Shapes, not fabricated	472	556	2,000
Shapes, fabricated	1,089	365	622
Plates, fabricated	16	13	298
Metal lath	24	101	174
Frames, sashes and sheet piling	103	446	319
Rails, 50 pounds	104	670	803
Rails, under 50 lbs.	.....	89	19
Rail fastenings	22	23	562
Switches, frogs, crossings	10	16	31
Railroad spikes	35	73	99
Railroad bolts, nuts	18	44	38
Boiler tubes, seamless	248	519	224
Boiler tubes, welded	25	27	19
Casing, oil-line pipe seamless	1,276	3,434	2,074
Casing, oil-line pipe, welded	89	67	31
Seamless black pipe, other than casing	68	20	67
Malleable-iron screwed pipe fittings	235	104	155
Cast-iron screwed pipe fittings	65	63	73
Cast-iron pressure pipe, fittings	167	216	51
Cast-iron soil pipe, fittings	287	116	251
Welded black steel pipe	948	708	932
Welded black wrought-iron pipe	136	26	243
Welded galvanized steel pipe	982	1,129	1,122
Welded galv. wrought-iron pipe	33	15	62
Riveted iron or steel pipe, fittings	1	42	2
Plain iron or steel wire	322	254	545
Galvanized wire	249	246	852
Barbed wire	1,625	1,750	2,479
Woven-wire fencing	66	25	83
Woven-wire screen cloth	73	28	56
Wire rope	233	84	145
Other wire and manufactures	179	10	238
Wire nails	482	479	615
Horseshoe nails	58	51	104
Tacks	36	42	36
Other nails, staples	153	299	308
Bolts, machine screws, nuts, rivets and washers	312	241	266
Iron castings	317	80	106
Steel castings	100	47	138
Car wheels, axles	250	429	385
Horseshoes	1	3	2
Iron, steel forgings, n.e.s	249	224	541
Total	80,567	63,936	49,928

Rail Output New Low in 66 Years

PRODUCTION of steel rails in the United States in 1932, at 402,566 gross tons, was 34.77 per cent of 1931, according to the American Iron and Steel institute. In 1931 production was 61.8 per cent of 1930.

Not since 1865 has so small a tonnage of rails been rolled and not since 1875 so small a tonnage of steel rails. In 1876 steel rail production was 412,461 tons and not until 1932 had there been a smaller tonnage.

Only 64 tons of bessemer rails were rolled in 1932, all under 50 pounds per yard; no electric steel rails were rolled; 9448 tons were rerolled from old rails and 2198 tons from new seconds and defective rails; 29,003 tons of girder and high T rails are included.

Of the 15 rail mills, 13 rolled open-hearth rails and three produced some bessemer. One mill in Pennsylvania and one in West Virginia rerolled old rails. Pennsylvania produced 103,897 tons of the 1932 total.

Heavy rails predominated, 85 per cent being over 100 pounds per yard and 53 per cent between 100 and 120 pounds per yard. Alloy-treated rails totaled 565 tons.

Steel Capacity Is Steady But Pig Iron Declines

American Iron and Steel institute has fractionally lowered its estimate of steel ingot capacity for the United States, making the total 68,199,176 gross tons as of Dec. 31, 1932, compared with 68,298,956 tons Dec. 31, 1931.

The change from 1931 to 1932 for basic open-hearth furnaces is from 58,505,640 tons to 58,609,140 tons; for acid open hearths from 897,990 tons to 881,990 tons; at bessemer plants from 8,070,000 tons to 7,895,000 tons; at electric steel plants from 805,240 tons to 792,960 tons; at crucible steel plants the estimate is unchanged at 20,086 tons.

The institute estimate for pig iron capacity Dec. 31, 1932, was 49,653,575 tons, compared with 50,937,775 tons Dec. 31, 1931. The ferroalloys estimate is unchanged at 802,400 gross tons and this makes a total of pig iron and ferroalloy capacity on Dec. 31, 1932, of 50,455,975 gross tons, compared with 51,740,175 tons Dec. 31, 1931.

Confident Talk at Annual Meetings

AN ENCOURAGING earnest of recovery is the increasing boldness of iron and steel executives in expressing their confidence.

At the annual stockholders' meeting of the United States Steel Corp. at Hoboken, N. J., April 17, Myron C. Taylor, chairman, conceded that "we are on the way to better things," and cited the 21 per cent operating rate of Steel corporation subsidiaries on that date as the best since March, 1932.

Percival Roberts Jr., veteran director of the Corporation, declared out of his experience with depressions since 1876 that there never was a real upturn until a sound business foundation has been established—a condition he is certain is now being fulfilled.

Speaking at a recent dinner in New York, Charles M. Schwab, chairman of the Bethlehem Steel Corp. and president of the American Iron and Steel institute, revealed his conviction that the turn has come.

H. S. Wilkinson, chairman of the Crucible Steel Co. of America, at its annual meeting April 20 said "the tide has really turned."

At the Steel corporation meeting Walter S. Gifford, David F. Houston, Nathan L. Miller and Messrs. Taylor and Roberts were re-elected directors. F. L. Cooper and A. T. Galbraith were elected directors to fill vacancies.

Steel corporation stockholders adopted a resolution commending President Roosevelt, were informed that pensions will be reduced 5 to 25 per cent May 1, were advised no bonuses have been paid for two years, and probably none this year.

River Shipments Gain

Shipments on Ohio river of steel products from Pittsburgh mills to Memphis, Cincinnati and other down-river ports, has improved considerably the last few days. The steamer WM. LARIMER JONES of Jones & Laughlin Steel Corp. left Pittsburgh for Memphis, Tenn., with a tow of steel products last week, and the steamers C. W. TALBOT and J. D. AYRES are in charge of the steel tows being made up at this time. The SAM CRAIG delivered a tow of steel products from St. Louis mills to Memphis, April 19. This steamer left Pittsburgh, April 11, and completed a 1575-mile trip in one week.

Harbison Re-elects Officers

Harbison-Walker Refractories Co., Pittsburgh, re-elected all directors and officers at its annual meeting April 17. J. E. Lewis, president, estimated a loss for the first quarter of $206,200 after all charges, including $130,300 for depreciation. March showed the smallest loss of any month for the quarter and April is showing further improvement.

Exempt From Sales Tax

Pig iron, metallurgical coke and most steel mill products will not be affected by the 1 per cent retail sales tax effective in New York state May 1, it is generally believed. There is some question, however, as to rails and track accessories, which would be sold for direct consumption.

Fabricators Name Chicago

American Institute of Steel Construction Inc., New York, will conduct its eleventh annual convention in Chicago, Oct. 17-20, during the concluding month of the Century of Progress exposition. Headquarters will be at the Stevens hotel.

Sharon Tube Co. Resumes

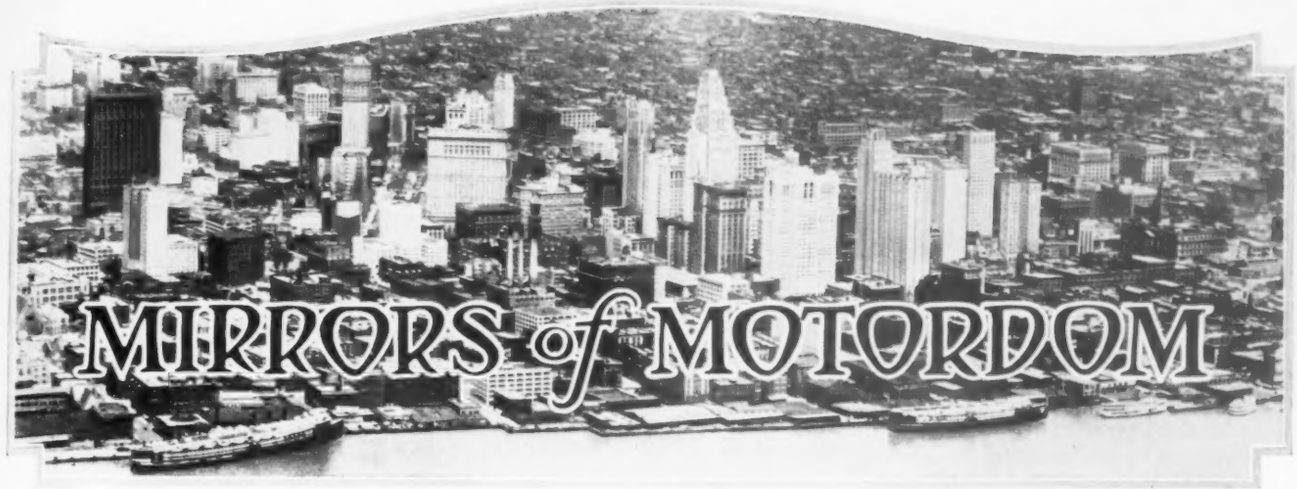
Sharon Tube Co., Sharon, Pa., resumed operations April 17 with a schedule calling for two weeks' production.

Production of Rails by Processes

Gross Tons

Years	Open-hearth	Bessemer	Electric	Rerolled*	Total
1914	1,525,851	323,897	178	95,169	1,945,095
1915	1,775,168	326,952	.....	102,083	2,204,203
1916	2,269,600	440,092	.....	144,826	2,854,518
1917	2,292,197	533,325	.....	118,639	2,944,161
1918	1,945,443	494,193	.....	101,256	2,540,892
1919	1,893,250	214,121	50	96,422	2,203,843
1920	2,334,222	142,899	297	126,698	2,604,116
1921	2,027,215	55,559	5	96,039	2,178,818
1922	2,033,000	22,317	.....	116,459	2,171,776
1923	2,738,779	25,877	118	139,742	2,904,516
1924	2,307,533	16,069	.....	109,730	2,433,332
1925	2,691,823	9,687	.....	83,747	2,785,257
1926	3,107,992	12,533	.....	97,124	3,217,649
1927	2,717,865	1,566	.....	87,055	2,806,486
1928	2,580,141	2,718	438	64,196	2,647,493
1929	2,662,163	3,486	723	55,766	2,722,138
1930	1,834,933	2,137	45	36,118	1,873,233
1931	1,135,551	813	15	21,372	1,157,751
1932	393,014	64	.....	9,488	402,566

*Rerolled from old steel rails.



DETROIT

EVIDENCING its faith in an expanding, attractive retail market, the automobile industry is launching a spring sales campaign that will compare favorably with the fanfare when new models were introduced at January show time.

Improvement in general business the past few days is more in the nature of justification rather than the cause of the drive, inasmuch as the steady recovery in production—last week was the sixth consecutive week—encouraged the industry.

While not unmindful that rising commodity prices will narrow the margin of surplus of some potential buyers, automobile manufacturers believe this will be more than offset by the confidence which will loosen the strings on purses already adequate and by the spending of funds released by bank adjustments.

Newspaper, magazine and billboard space and radio time are being used in varying degrees. Practically all manufacturers are participating, but the low-price field—excepting Ford—is taking the lead in sales promotion as in sales.

General Motors is placing major emphasis upon Chevrolet and secondary emphasis upon Pontiac. Last week's magazine and newspaper advertisements, announcing the new town sedan of Chevrolet, fired the opening gun. This, incidentally, is the first real sales effort behind the new Chevrolet standard series.

Fourth Plymouth in Year

Upon the new Plymouth line, Chrysler is making probably the greatest concentration of publicity and sales effort in its history. This line, comprising what has been announced as the 112-inch deluxe series and also a revised 108-inch standard series at a lower price, marks the fourth major change in a year.

The Plymouth series introduced in April, 1932, was superseded by the models brought out last November. The two new lines now being offered emphasize improvements in body trim and design, especially a more vertical radiator, rather than changes in the power plant. The deluxe series, with a base price of $495, also reclaims much of the price reduction announced in December on the advent of the Chevrolet master series. The first of a series of radio presentations, sponsored by Plymouth, was broadcast last Friday.

As a further bid for sales, and partially caused by the longer Plymouth encroaching on the bottom of the Dodge line, Chrysler is bringing out a larger Dodge six on a 115-inch chassis, with no change in price. The new Dodge engine has a bore of 3⅛-inch and a stroke of 4⅜-inch, with a compression ratio of 5.5 to 1, featuring a noiseless transmission, as in the new Plymouth.

Continental Resumes

Essex was the leader in the spring campaign, having got under way with its sales drive just as the national bank holiday was declared. It did not, however, deviate, has greatly increased sales to its credit, and continues its merchandising effort on a broad scale.

Continental, having resumed production April 14 following a shutdown occasioned by the banking situation, is becoming more aggressive. Willys, in receivership, is not manufacturing passenger cars, though continuing through the remainder of this quarter on trucks for International Harvester Co.

Probably the best Fords ever produced—the present eight and four—are the least known. The bulge in assemblies at Fordson to almost 2500 units a day, 5 days a week, is due entirely to the merit of the line and the self-preservation instinct of dealers.

The Ford company has never formally announced the present series, whatever advertising has been done has been the voluntary publicity of dealers in their local newspapers, and no Ford campaign is in sight. In fact, the post of advertising manager of the Ford Motor Co. remains vacant.

It is understood that releases of production material for the new low-price 44 series of Ford will be issued in about 30 days and there are some who believe that a continuation of the brisk market may free a Ford advertising appropriation.

Reo is making an automatic transmission standard equipment on its Royale line and optional in the Flying Cloud series. A short rod on the instrument board, pushed in, supplants the gear shift lever. A half twist of the rod is reverse. A creeper gear insures maximum engine power on hills or in mud. Reo is not the only manufacturer experimenting with a bypass for gear shifting but appears to be the first to offer it.

Auburn went into the new year without fender valances and other major changes in design, but it shortly will bring out what will virtually be its 1933 series. Among other things, Auburn has done considerable experimenting with four-wheel drive.

A manufacturer in the Detroit area is assembling costs on a model that will be competitive with Ford and Chevrolet—a price level which will be a new low for this manufacturer.

Production Trend Upward

Production of automobiles keeps bowling along at a pace of 150,000 or more units for April. The trend is upward in greater or lesser degree with practically every manufacturer.

Ford and Chevrolet each will assemble close to 50,000 units this month. Briggs is fabricating 1500 Ford bodies daily, and Murray 1000. Plymouth output is now estimated at almost 20,000 for this month and Pontiac at 7000, these four being the leaders in the Detroit area.

April production, if anything, is slightly behind retail sales. If the brisk upturn in demand early in April continues through the last half of the month, a good May would be

assured merely to build dealer stocks up.

Farther than May the industry cannot see, but the improvement in general conditions indicates that normal spring demand was late in maturing and hence will push farther into the summer than usual.

Even in Wayne county (Detroit) automobile registrations show improvement and further gains are expected following the distribution this week of a 30 per cent dividend on the frozen assets of the two leading banks. This distribution, amounting to $131,201,000, still leaves 60 per cent of deposits or $400,000,000 frozen. If the personal statements from a wide variety of sources are credible, no small portion of the funds being released will flow into down payments for new cars.

Detroit Short of Scrap

Representing coverage for May, releases for finished steel from automotive consumers the past ten days have been the heaviest for a similar period in several years. Much of the fear of making commitments slightly larger than actual requirements has vanished. The Great Lakes division of the National Steel Corp. continues to operate all six of its open-hearth steel furnaces.

An amazing situation is developing in the iron and steel scrap market. In the past, the supply of scrap has exceeded the demand, even including the requirements of the Great Lakes plant and Ford, but Detroit is being transformed from an exporter into an importer of scrap. It is possible that material may move into the district shortly, and the prospect for any movement out of Detroit this summer is slim.

Chrysler, which has been throwing down its bundles and short turnings in preference to accepting the low prices which have prevailed over the past year, may shortly sell its accumulation of 17,000 tons. Ford, which is now charging borings into the cupola in a container, melting container and all, is putting open-hearth scrap on the ground and has 30,000 to 40,000 tons stored. The Rotary Electric Steel Co., to produce semifinished steel direct from scrap in electric furnace, will soon be a new buyer in the Detroit district. Altogether, 75,000 to 80,000 tons of scrap is in storage in Detroit.

Car Shop Back to 1929

Chicago, Milwaukee, St. Paul & Pacific railroad has recalled 564 workmen to its West Milwaukee, Wis., car shops, bringing the force to 800, equivalent to the summer of 1929. These men will be employed at least until July 1, partly reconditioning cars for Chicago Century of Progress traffic.

Died:

AUGUSTUS F. MEEHAN, 62, president of the Ross-Meehan Foundries, Chattanooga, Tenn., and widely-known southern industrialist, at Cincinnati, April 15. A graduate of Notre Dame and Cornell universities, he engaged in the foundry and manufacturing business in Mexico in 1893, being president of the Monterrey Foundry & Mfg. Co. from 1893 to 1903. In the latter year he went to Chattanooga as president of the Ross-Meehan Brake Shoe & Foundry Co. This company became the Ross-Meehan Foundries and achieved a wide reputation for its high-tensile cast iron marketed as

Augustus F. Meehan

Meehanite metal. It was the first completely electrically operated steel jobbing foundry in the country.

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R. J. Kaylor, 65, former publicity director, Youngstown Sheet & Tube Co., at Youngstown, O., April 17. Following his long career as a newspaper man, he became associated with the Sheet & Tube company in 1915, retiring Jan. 1, 1932.

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Oliver W. Sabold, 72, retired ironmaster who for a quarter of a century headed one of the oldest blast furnace concerns in the country, April 18 at Boyertown, Pa. When 14 he became an apprentice with the Colebrook Iron Co. with blast furnaces built in 1881-2 at Lebanon, Pa. Twenty-eight years later he became president of the company. It had been formed in 1720 as the Manatawney Iron Co., reorganized in 1836, and later passed into the hands of the Lackawanna Iron & Steel Co. and finally in 1917 into the Bethlehem Steel Corp. by which the stacks were dismantled in 1923. From 1904 to 1930 Mr. Sabold was president of the Cornwall Iron Co., former owner of the Colebrook stacks. He retired in January, 1930.

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Fred B. Jones, 75, former vice president, the Adams & Westlake Co., Chicago, April 9.

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John M. Mercer, 56, vice president, Northern Construction Co. Ltd., at Vancouver, B. C., April 12.

□ □ □

William S. Shelow, metallurgist for the Semet-Solvay Co., Cincinnati, March 21.

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Harold W. Smith, 47, until June, 1932, generating apparatus manager, Westinghouse Electric & Mfg. Co., at Pittsburgh, March 28.

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H. J. McDougall, 64, vice president and director, Wallaceburg Brass & Iron Co., Wallaceburg, Ont., April 10.

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Isaac Bloch, president, Foundry & Machine Co., Selma, Ala., April 16. He was also president of the Selma chamber of commerce.

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Louis O. Cameron, identified with the Pressed Steel Car Co., Pittsburgh, in various capacities for 22 years, at Washington, April 13.

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Samuel B. Jacobs, 62, president, Vulcan Ingot Metal Co., North Chicago, Ill., April 17. Mr. Jacobs also was secretary and a director of the Silica Brick & Engineering Co., Chicago.

□ □ □

Charles F. Kehr, 43, assistant manager for Joseph T. Ryerson & Son Inc. at Cleveland, April 20. A graduate of Armour Institute of Technology, he joined the Ryerson warehouse interest 18 years ago.

□ □ □

Frank J. Walker, 57, former superintendent of the bessemer department of the Republic Steel Corp., Youngstown, O., and later with the A. M. Byers Co., Ambridge, Pa., at Youngstown, April 6. He retired last November.

□ □ □

Herman E. Frentzel, 68, for 22 years chief mechanic of the Falk Corp., Milwaukee, April 12. He learned the machinist trade in Germany, coming to America in 1885. Before joining the Falk Corp., Mr. Frentzel was shop superintendent of the Pawling & Harnischfeger Co., now the Harnischfeger Corp., for 15 years.

Industrial Men in the Day's News

Charles J. Thomson, Construction Foreman, General Electric Co.

DETERMINED to work for General Electric at Schenectady, he hitchhiked across the continent, and won a post.

FOR his part in setting up electrical equipment at Dneprostroy, both the Soviet government and the Coffin foundation have honored him.

A NATIVE of Scotland, he was reared in South Africa, which is his home. During the war he was an aviator with Allenby.

ERECTING ponderous electric generating units which, although weighing hundreds of tons, are machined to a hair-like precision, is always a task to challenge a man's resourcefulness and courage. When the site of the installation is thousands of miles from the factory, across continents and oceans, in a land of difficult language and unexpected practices, where trained personnel is absolutely limited, the assignment is one that taxes human capacities to the utmost.

These were exactly the conditions encountered by Charles J. Thomson, construction foreman of the General Electric Co., Schenectady, N. Y., recently returned from Russia, where he supervised the setting up of the electrical equipment at Dneprostroy, the hydroelectric development on the Dnieper river.

The apparatus which Mr. Thomson and his crew successfully erected had a market value of nearly $4,000,000. It included five huge waterwheel generators, the largest ever built by any manufacturer. Each is rated at more than 100,000 horsepower and would supply electric current to illuminate 700,000 homes of the average size. In addition, there was a large bank of transformers, and a multitude of switchgear equipment. The work of erection occupied a year and a half, and after it was completed and the fete day of inauguration of service from the big plant arrived the question in everyone's mind was: Would the big machines run without trouble? They did, perfectly.

Upon his return to America Mr. Thomson received from the Charles A. Coffin foundation, established by the General Electric Co., a citation and honorarium in recognition of his work at Dneprostroy.. He also was awarded the Order of the Red Banner of Labor, by the Soviet government.

Mr. Thomson was born in 1896 in Scotland. In his boyhood he went to South Africa, where his home has been since. He has just sailed on a leave of absence to visit his family in Cape Town. He is a graduate of the South African School of Mines. During the World war he served with distinction as an aviator attached to General Allenby's army.

In 1923 he landed in America at Oakland, Calif., and got work in the Oakland plant of General Electric. He learned so much about the company and its traditions that he became possessed of an ambition to work at the main headquarters of the company at Schenectady. Lacking any extensive financial resources, he crossed the continent in 1924 by hiking and "lifts" from autoists. When he arrived in Schenectady he was much travel-worn in appearance, but he so impressed the head of the contract service department by his bearing, knowledge and training, that he was engaged at once.

As a construction foreman he handled major installations for General Electric at Muscle Shoals, and in Brazil, Bolivia, and Chile, installing electrical machinery at mines and manufacturing plants. Then, in 1931, when the problem of erecting the Russian generators came up, Mr. Thomson was the company's selection, without hesitation, for supervising this extremely exacting piece of work, which at times demanded all the qualities of a high-class diplomat, as well as the usual technical ability and capacity for handling men.

R. E. HELLMUND, chief electrical engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., since 1926 and associated with the company since 1907, has been made chief engineer. He is the first Westinghouse official to hold this office since the death of B. G. Lamme in 1924.

□ □ □

J. Milnor Roberts, of Pittsburgh, McClintic-Marshall Corp., Bethlehem, Pa., has been placed on the national extension committee of the Propellor club, by the Propellor Club of Pittsburgh.

□ □ □

F. H. Willcox, vice president, Freyn Engineering Co., Chicago, has returned from an 11-month trip abroad

(*Please turn to Page* 56)

EDITORIAL

One Step Nearer To a Planned Economy!

ABANDONMENT of the gold standard is an experience the United States has not undergone since Civil war days. The country escaped it by a hair's breadth in 1895, and, according to President Hoover, we were very near to it at one time last fall. Technically the nation was off the gold basis on March 4 of this year, and in the period from that date to April 19 the only thing that kept us on the gold standard was the lifting of the export bar to permit a few small shipments to go out and the implication by the Roosevelt administration that the dollar would be supported by gold if necessary.

Therefore the President's action on April 19 in announcing that the government no longer will attempt to hold the dollar at par not only was a surprise at home and abroad but it also commits the United States to the consideration of problems that it has not encountered since 1879, when the resumption of specie payments re-established the nation on gold for the first time after the Civil war.

To list all of the implications arising from President Roosevelt's action of April 19 is impossible and would avail little. Undoubtedly it places him in a better strategic position in dealing with the Washington-bound envoys of foreign states. Its final results in terms of negotiations and agreements with world powers cannot be anticipated. Time alone will decide the wisdom of this drastic move from the standpoint of international relations.

First Effects Are Rises in Security and Commodity Prices and Activity

At home the first effects are seen in the hectic trading in the stock market, rises in certain commodities and an expansion of business and industrial activity. This should continue for some time, but it will be remembered that Great Britain's departure from the gold standard, while stimulating prices and trade for a period, failed in the long run to lift it to a satisfactory condition. It still is too early to say that the form of inflation President Roosevelt has chosen for us will lead us to the safe highroad of recovery.

Of one thing we may be fairly certain, and that is that having embarked on a career of manipulated monetary standards, the government will find it necessary to manipulate many other important factors, such as hours of work, wages, prices, production, etc. In changing the value of the dollar, the government destroys at one stroke the effective working of many economic laws with which we have gained considerable experience. Left to themselves, the laws of supply and demand will not react under the new conditions as they did in the past. The government will be forced to take a hand in controlling industrial operations to keep them in harmony with its manipulated control of the dollar.

Thus, whether or not we like it, we are on the road to a planned economy. Many of the decisions of broad policy which executives of finance and industry have made of their own initiative in the past, will, under the new order, be made through government channels. It is conceivable that hours of labor will be regulated, wages dictated, selling prices pegged and trade practices controlled by industrial boards acting under governmental authority.

Nation Exchanges Individualism for State Regulation for Period of Experiment

If this transpires, then we shall have given up—for an indefinite period—our boasted individualism for a condition of widespread state regulation. It is an eventuality that many have feared, but one that could hardly have been avoided under the series of shocks that have swept through the world since 1929.

There will be unlimited debate as to whether the action taken is the best way out of present difficulties. Such argument is largely academic. The die is cast, and from now on the important job of government will be to control the forces newly set in motion. It is not too early to determine how to prevent a runaway situation, if it should develop.

Meanwhile, industry must prepare itself to function under a set-up considerably different from anything experienced in the careers of its present executives. In some respects, activity under government regulation may be reminiscent of the days of the war industries board.

We are experimenting on a grand scale and with few charts to guide us. Going off the gold standard is only one step in a long series of actions we must take to fight the depression. By itself it need not be disastrous, nor will it bring back prosperity. But it is a drastic step and points toward a planned economy.

THE INDUSTRIAL DIAL

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The Business Trend Section of STEEL
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ANTICIPATION of inflation and President Roosevelt's unexpected act in again barring gold exports are the major factors contributing to the new spurt in business which was manifested last week in rising commodity and security prices, greater activity in the stock and commodity markets, and expansion in the volume of production in many industries.

In the steel industry the effect of this impetus was spectacular in that the rate of steelworks operations for the week ending April 22 exceeds the rate for the corresponding week of 1932. This is the first time this has happened since the stock market crash in 1929. This is shown graphicaly on the chart on page 11.

From what has transpired in the last few weeks, one may assume that the pump of business now is being primed. Whether or not it will stay primed depends upon so many factors that predictions at this time are futile. The government must stand by with several dippersful of water for further priming, and finance and business must keep the pump handle going steadily so that not a single stroke will be lost. If some other crisis develops which would induce the man with the dipper to leave his task or the man at the pump handle to desert his job, then we will have to start all over again.

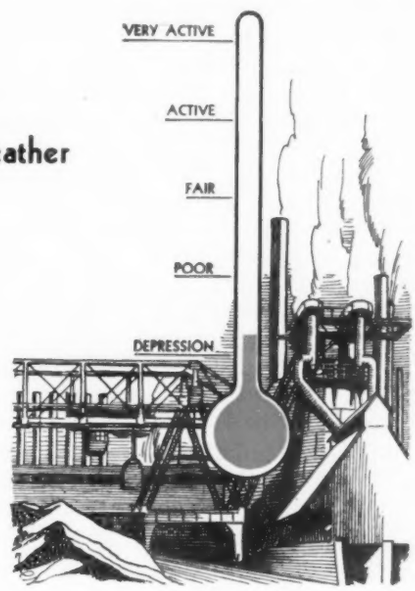
However, assuming that at last the pump is being primed, we will move into an interesting period of governmental control, in which American industry will experience regulation to a degree not heretofore witnessed in this country except in time of war. The nation is embarking on a gigantic experiment.

Where Business Stands

Monthly Average, 1932 — 100

	March, 1933	Feb., 1933	March, 1932
Steel Ingot Output	78.2	105.7	123.8
Pig Iron Output	73.8	83.4	131.6
Freight Movement	84.8	90.2	105.0
Building Construction	—	56.8	130.2
Automobile Output	86.8	92.3	106.7
Wholesale Prices	92.0	89.4	100.7

Industrial Weather



TREND:
Upward

The Barometer of Business

Industrial Indicators

	Mar., 1933	Feb., 1933	Mar., 1932
Pir iron output (Daily average tons)	17,484	19,752	31,194
Machine Tool index	20.1	27.5	43.1
Unfilled orders (tons)	1,841,002	1,854,200	2,472,413
Ingot output (Daily average, tons)	32,812	44,431	51,990
Dodge Bldg., awards in 37 states (sq. ft.)	.....	7,382,400	16,924,200
Automobile output	*103,500	110,112	127,277
Coal output, tons	23,646,000	27,220,000	32,320,000
Business failures, number	1,948	2,378	2,951
Business failures, liabilities	$48,500,212	$65,576,068	$93,760,311
Cement production, Bbls.	.....	2,772,000	3,971,000
Cotton consumption, bales	494,167	441,663	488,655
Car loadings (weekly average)	460,300	489,495	570,150

*Estimated.

Foreign Trade

	Mar., 1933	Feb., 1933	Mar., 1932
Exports	$108,000,000	$100,000,000	$154,876,000
Imports	$95,000,000	$83,000,000	$131,189,000
Gold exports	$28,123,000	$21,521,000	$43,909,000
Gold imports	$14,942,000	$30,381,000	$19,238,000

Financial Indicators

	Mar., 1933	Feb., 1933	Mar., 1932
25 Industrial stocks	$85.07	$84.55	$161.39
25 Rail stocks	$21.27	$21.43	$26.94
40 Bonds	$62.07	$65.46	$66.97
Bank clearings (000 omitted)	$16,449,678	$19,949,176	$24,214,435
Commercial paper rate N. Y., per cent)	1½–4½	1¼	4
*Commercial loans (000 omitted)	.....	$5,393,000	$6,883,000
Federal Reserve ratio, per cent	57.8	55.3	70.9
†Railroad earnings	$9,854,882	$13,265,721	$21,655,333
Stock sales, N. Y. stock exchange	20,088,664	19,319,900	33,060,518
Bond sales, par value	$192,156,200	$231,539,700	$252,683,200

*Leading member banks Federal Reserve System.
†February, January and February, respectively.

Commodity Prices

	Mar., 1933	Feb., 1933	Mar., 1932	Monthly Av. 1913
STEEL's composite average of 14 iron and steel prices	$28.35	$28.31	$29.61	$26.32
Bradstreet's index	$6.53	$6.35	$7.15	$9.21
Wheat, cash (bushel)	72c	67c	71c	92c
Corn, cash (bushel)	43c	40c	49c	51c
Petroleum, crude (Bbl.)	42c	42c	75c	$2.50

Steel Producers Lose 2.85% On Capitalization in 1932

TWENTY of the largest producers of steel, representing an ingot capacity of 62,176,900 gross tons, or 95 per cent of the total capacity of the United States, sustained losses in 1932 which averaged 2.85 per cent on their capitalization, the seventh annual financial survey of STEEL reveals.

This compared with a return of 0.40 per cent in 1931, 4.54 per cent in 1930 and 9.88 per cent in 1929, which was the best year in the recent history of the steel industry.

These 20 producers, each having an annual capacity of 200,000 tons or more of ingots, averaged a loss of $1.87 per ton of potential ingot capacity. This is not to be confused with the loss of $12.33 per ton experienced on actual production in 1932.

Of these 20, only two—National Steel Corp. and Granite City Steel Co.—showed a profit in 1932. The net loss for the entire group, before dividends, was $148,439,831, substantiating the forecast recently that the net loss of the iron and steel industry in 1932 approximated $150,000,000. In general, the industry's deficit for 1932 was nine times that of 1931.

In every case but two, the 1932 trend was downward; that is, the 1931 loss was intensified during 1932 or a 1932 earning was less than the 1931 one. These two exceptions were the American Rolling Mill Co. and the Gulf States Steel Co., which lost less in 1932 than in 1931.

The following trends in 1932 are evident from a study of the accompanying analysis:

1. Reduction of funded debt in every case except the Otis Steel Co., funded debt for which remained the same.

2. Reduction in surplus, applicable in each case.

3. Decline in total capitalization, therefore, affecting capitalization per ton of ingot capacity and the percentage of total earnings to capitalization.

4. True in every case save the Sharon Steel Hoop Co., a reduction in current liabilities.

5. Common to all, a drop in current assets. It must be noted, however, that current liabilities declined greater than current assets.

6. Slight reduction in total ingot capacity during 1932, which was a part of a trend to reduce invested capital.

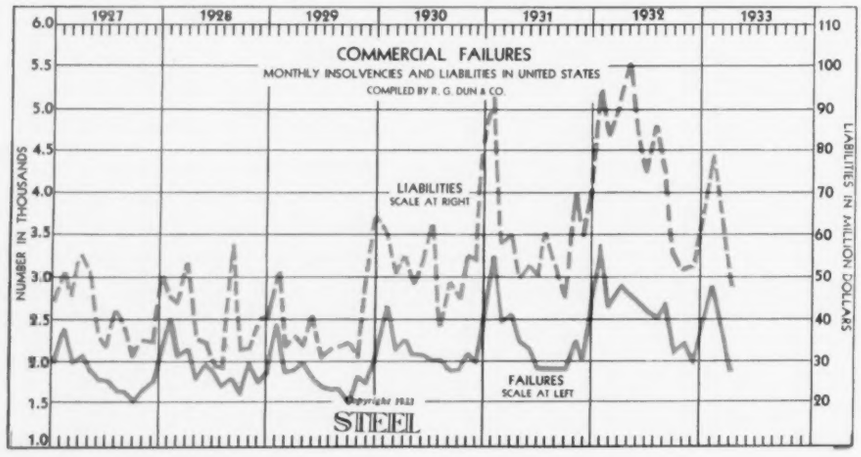
7. Virtual suspension of common dividend disbursement by the industry and in many cases suspension of preferred dividends.

Only National Steel Corp., Granite City Steel Co. and Midvale Co. were paying common dividends at the end of 1932. This compares with these three plus four other producers which were paying at the end of 1931, but which latter passed dividends in 1932. During 1931, 13 of the 20 had passed their common dividends entirely.

Steel remains a $4,000,000,000 industry, though its total assets declined from $4,682,614,968 in 1931 to $4,405,165,167 in 1932.

Steel's liquid and strong current position is indicated by the ratio of current assets to current liabilities. In 1932, the ratio was 7.9 to 1. In 1931, the current ratio was 6.8 to 1.

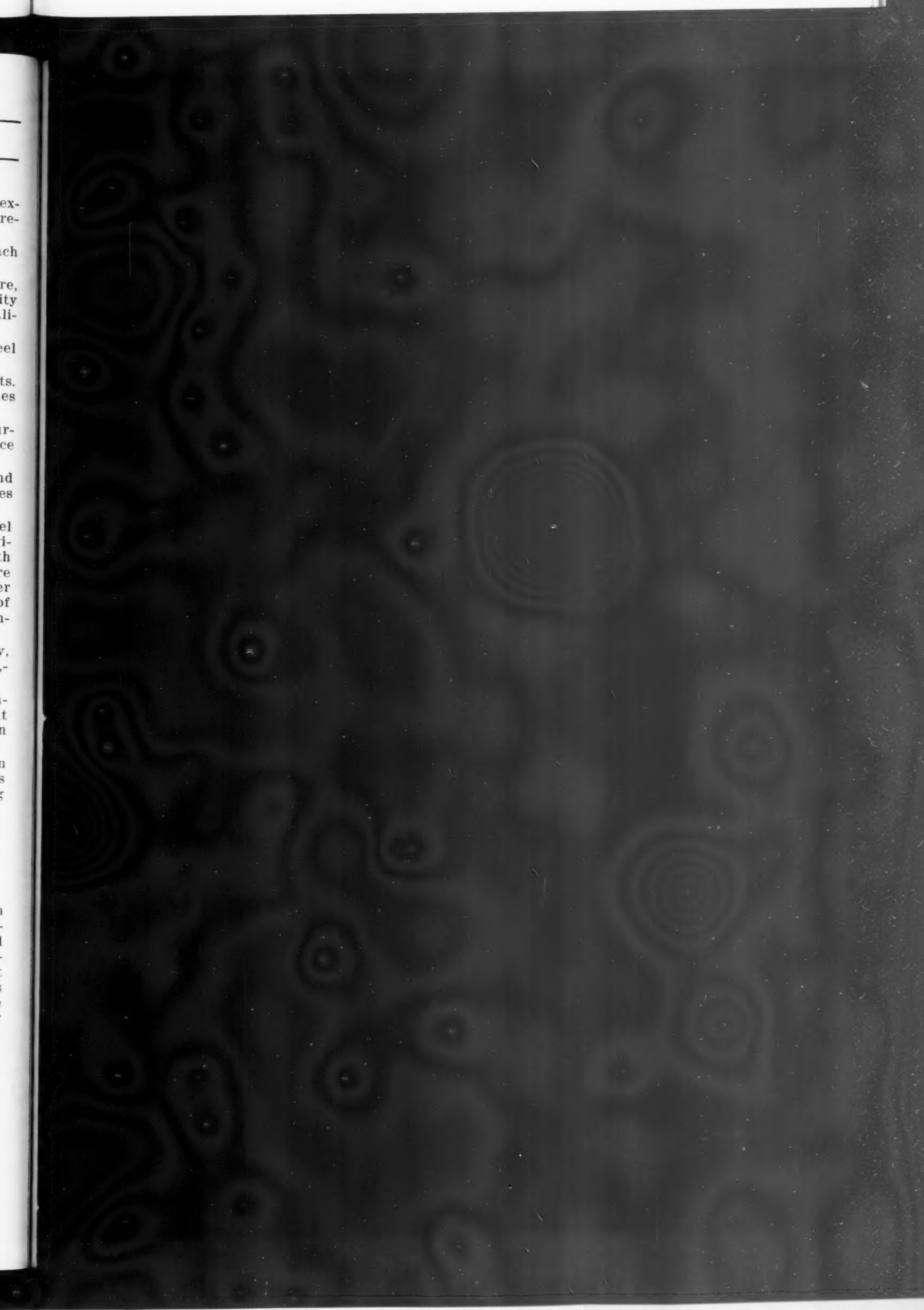
STEEL gladly acknowledges the co-operation of the comptrollers and other financial officers of the companies listed in the accompanying analysis.



Number		Liabilities	
March, 1933	1,948	March, 1933	$48,500,212
Feb., 1933	2,378	Feb., 1933	65,576,068
March, 1932	2,951	March, 1932	93,760,311

March Business Failures Lowest Since 1925

Commercial failures in March were very much reduced, both in the number and in the amount involved. According to Dun & Bradstreet Inc., there were 1948 business failures in March. This is the lowest number of defaults for the third month since 1925 and compares with 2378 failures in February and 2951 during March, 1932. Liabilities reported for March this year were $48,500,212 against $65,576,068 for February and $93,760,311 for March, 1932.



Financial Analysis of Ir

Earnings, Capitalization, Assets and Liabilities of 20 Pro

Supplement to S

Top Line of Figures for Each Comp

NAME OF COMPANY	No. Shares Common Stock Outstanding	Common Stock	Preferred Stock	Funded Debt	Surplus	Total Capitalization	Net Earnings Before Dividends	Tot Bef In
United States Steel Corp.	8,703,252	$870,325,200	$360,281,100	$95,950,254	$680,350,268	$2,006,906,812	$71,175,705(x)	$6
	8,703,252 (Par 100)	870,325,200	360,281,100	98,887,294	773,087,213	2,102,580,807	13,038,141	
Bethlehem Steel Corp.	3,200,000	315,900,000	93,400,000	126,212,420	89,221,676	635,003,721	19,404,431(x)	
	3,200,000 (No. par)	315,900,000	94,000,000	136,971,877	114,844,280	671,985,782	115,745	
Republic Steel Corp.	1,956,981	91,289,344	64,176,000	50,725,250	42,698,739	248,889,333	11,261,195(x)	
	1,953,920 (No par)	91,289,344	64,560,800	53,830,650	52,677,763	262,358,557	9,034,153(x)	
Jones & Laughlin Steel Corp.	576,320	57,632,000	58,713,900	8,770,000	56,685,951	181,801,851	7,910,149(x)	
	576,320 (Par 100)	57,632,000	58,713,900	9,929,000	67,291,440	193,566,340	2,283,459(x)	
Youngstown Sheet & Tube Co.	1,200,000	75,521,834	15,000,000	89,967,000	25,780,077	206,318,722	13,272,783(x)	
	1,200,000 (No par)	75,521,834	15,000,000	92,055,000	40,281,501	222,858,335	7,040,900(x)	
National Steel Corp.	2,156,832	53,920,800	None	41,800,000	48,343,742	144,064,542	1,662,919	
	2,156,832 (No par)	53,920,800	None	43,033,333	50,527,863	147,481,996	4,443,323	
Inland Steel Co.	1,200,000	35,000,000	None	41,400,000	24,137,761	100,537,761	3,320,958(x)	
	1,200,000 (No par)	35,000,000	None	42,000,000	28,637,621	105,637,621	1,263,600	
American Rolling Mill Co.	1,710,776	42,769,409	2,053,300	41,118,824	16,779,809	102,761,262	2,029,602(x)	
	1,710,776 (Par 25)	42,769,409	2,053,300	42,098,037	19,703,551	106,634,317	3,098,446(x)	
Wheeling Steel Corp.	380,521	19,325,700	38,076,014	27,241,000	5,663,640	90,306,354	3,274,832(x)	
	387,691 (No par)	19,384,550	38,162,014	29,780,500	8,938,473	96,265,537	3,339,139(x)	
Otis Steel Co.	841,002	4,205,010	11,503,433	10,827,500	2,935,298	29,471,241	2,830,155(x)	
	841,002 (Par 5)	4,205,010	11,503,433	10,860,000	7,352,137	33,920,579	1,571,342(x)	
Crucible Steel Co. of America	450,000	45,000,000	25,000,000	13,250,000	22,752,743	106,002,743	3,613,616(x)	
	450,000 (Par 100)	45,000,000	25,000,000	13,500,000	27,097,105	110,597,105	2,016,518(x)	
Colorado Fuel & Iron Co.	340,505	8,512,625	2,000,000	32,183,000	4,709,182	47,404,807	4,253,261(x)	
	340,505 (No par)	8,512,625	2,000,000	32,188,000	9,623,813	52,324,438	3,363,207(x)	
Pittsburgh Steel Co.‡	253,500	25,350,000	10,475,000	8,878,000	7,064,732	51,767,732	2,501,081(x)	
	253,500 (Par 100)	25,350,000	10,475,000	9,356,000	9,522,637	54,703,637	1,713,726(x)	
Lukens Steel Co.§	317,976	15,898,800	None	3,633,400	1,189,325	20,721,525	1,111,982(x)	
	317,976 (Par 50)	15,898,800	None	3,686,400	2,912,306	22,497,506	483,265(x)	
Sharon Steel Hoop Co.	375,000	1,875,000	None	6,000,000	12,839,201	20,714,201	2,016,269(x)	
	375,000 (No par)	1,875,000	None	6,200,000	15,173,572	23,248,572	1,396,996(x)	
Allegheny Steel Co.	610,732	3,817,075	3,342,600	None	11,472,285	18,631,960	1,052,080(x)	
	610,732 (No par)	3,817,075	3,342,600	None	13,073,317	20,232,992	50,228	
Gulf States Steel Co.	197,500	16,850,000	2,000,000	5,187,500	2,815,423	26,852,923	637,369(x)	
	197,500 (No par)	16,850,000	2,000,000	5,375,000	3,333,738	27,558,738	976,230(x)	
Granite City Steel Co.	255,292	6,043,326	None	None	2,715,418	8,758,745	13,827	
	260,347 (No par)	6,089,451	None	None	3,039,149	9,128,600	332,319	
Continental Steel Corp.(A)	175,648	6,081,838	2,862,000	1,414,000	1,134,124	11,491,962	205,327(x)	
	177,952 (No par)	5,983,048	2,952,400	1,530,000	1,364,406	11,829,854	406,584(x)	
Midvale Co.	200,000	14,574,621	None	None	715,080	15,289,701	245,782(x)	
	200,000 (No par)	14,574,621	None	None	1,829,676	16,404,297	750,116	
Total, 1932		$1,709,892,582	$688,883,347	$604,558,148	$1,060,004,574	$4,073,597,898	$148,439,831(x)	$116,
Total, 1931		1,709,898,767	690,044,547	631,281,091	1,250,311,561	4,291,815,610	16,730,493(x)	17,
Total, 1930		1,760,374,264	685,511,832	555,537,588	1,366,957,172	4,376,909,581	167,333,920	198,

(x) Loss

‡ Fiscal year ends June 30

§ Fiscal year ends Oct. 25

(A) Fiscal year changed as of June 30, 1932, on latter date. Comparison of 1931 on basis of year ended Dec. 31.

Year
1925
1926
1927
1928
1929
1930
1931
1932

# of Iron and Steel Industry for 1932

20 Producers Having an Annual Ingot Capacity of 200,000 Tons or More

ent to STEEL, issue of April 24, 1933

ach Company Presents Data for 1932; Second Line is 1931

rnings ore lends	Total Earnings Before Div. and Int. on Bonds	Earnings per Share	Per Cent Total Earnings on Capitalization	Earnings Per Ton Ingot Capacity	Rated Ingot Capacity, Tons	Capitalization Per Ton Ingot Capacity	Dividend Rate Per Common Share, Dec. 31	Total Assets	Current Assets	Current Liabilities	NAME OF COMPANY
,705(x)	$65,862,244(x)	$10.56(x)	3.28(x)	$2.41(x)	27,341,900	$73.40	$....	$2,158,732,222	$397,486,241	$46,987,376	.....United States Steel Corp.
,141	18,507,765	1.39(x)	0.88	0.66	27,841,300	75.52	4.00	2,279,802,813	494,532,808	63,881,148	
,431(x)	12,607,451(x)	8.11(x)	1.97(x)	2.07(x)	9,360,000	67.84	....	659,322,587	111,050,005	15,246,904	.....Bethlehem Steel Corp.
,745	7,541,784	2.12(x)	1.12	0.01	9,540,000	70.44	2.00	706,820,776	141,873,201	25,563,503	
,195(x)	7,849,791(x)	5.75(x)	3.15(x)	1.58(x)	4,968,000	50.10	....	270,168,332	35,569,355	8,131,730	.....Republic Steel Corp.
,153(x)	5,442,075(x)	4.62(x)	2.06(x)	1.09(x)	4,968,000	52.81	....	290,621,255	47,297,200	11,606,130	
,149(x)	7,458,266(x)	18.06(x)	4.10(x)	2.18(x)	3,420,000	53.16	....	193,527,940	44,474,350	3,178,209	....Jones & Laughlin Steel Corp.
459(x)	1,770,074(x)	11.09(x)	0.91(x)	0.52(x)	3,420,000	56.60	....	206,296,895	53,964,906	4,310,886	
,783(x)	9,508,883(x)	11.06(x)	7.92(x)	3.05(x)	3,120,000	66.13	....	215,938,985	62,115,837	4,279,076	..Youngstown Sheet & Tube Co.
,900(x)	2,677,328(x)	6.55(x)	1.20(x)	0.86(x)	3,120,000	71.43	....	236,024,088	73,238,380	6,067,148	
,919	3,790,935	0.77	2.63	1.70	2,232,000	64.55	0.50	149,876,301	32,526,508	3,446,492	.....National Steel Corp.
,323	6,559,176	2.06	4.45	2.94	2,232,000	66.08	2.00	157,523,813	35,344,875	7,460,409	
958(x)	1,437,708(x)	2.77(x)	1.43(x)	0.70(x)	2,000,000	50.27	....	106,284,661	20,081,876	3,005,254	.....Inland Steel Co.
,600	3,126,600	1.05	2.96	1.56	2,000,000	52.82	2.00	115,586,981	28,836,848	5,508,437	
,602(x)	210,800	1.19(x)	0.21(x)	0.09(x)	2,200,000	46.71	....	138,153,569	25,910,280	2,901,105	.....American Rolling Mill Co.
,446(x)	779,406(x)	1.88(x)	0.72(x)	0.41(x)	1,902,000	56.06	....	143,785,233	28,130,383	4,217,919	
,832(x)	1,720,144(x)	8.47(x)	1.90(x)	1.15(x)	1,500,000	66.66	....	104,414,825	22,548,632	2,450,673	.....Wheeling Steel Corp.
,139(x)	1,660,470(x)	13.59(x)	1.72(x)	1.11(x)	1,500,000	70.53	....	112,836,695	28,247,182	4,215,084	
,155(x)	2,110,894(x)	3.36(x)	7.16(x)	2.55(x)	830,000	35.50	....	34,165,332	4,621,416	2,621,591	.....Otis Steel Co.
,342(x)	849,121(x)	1.87(x)	2.50(x)	1.02(x)	828,000	40.95	....	38,377,092	6,099,318	2,924,837	
,616(x)	2,949,033(x)	9.65(x)	2.78(x)	3.37(x)	875,000	121.14	....	110,040,988	17,825,421	3,249,796	....Crucible Steel Co. of America
,518(x)	1,339,435(x)	8.38(x)	1.21(x)	1.54(x)	875,000	126.39	....	114,952,971	21,871,053	3,567,418	
,261(x)	2,644,099(x)	12.49(x)	5.59(x)	3.15(x)	840,000	56.43	....	49,919,996	8,453,112	2,300,154	.....Colorado Fuel & Iron Co.
,207(x)	1,752,173(x)	9.87(x)	3.31(x)	2.07(x)	840,000	62.29	....	55,156,251	11,613,347	2,648,605	
,081(x)	1,833,387(x)	9.88(x)	3.54(x)	2.54(x)	720,000	71.89	....	74,885,177	15,432,071	1,724,452	.....‡Pittsburgh Steel Co.
,726(x)	1,066,626(x)	9.65(x)	1.95(x)	1.48(x)	720,000	75.98	....	76,911,451	17,559,451	1,933,757	
,982(x)	746,683(x)	3.49(x)	3.60(x)	1.36(x)	550,000	37.67	....	22,169,095	3,116,204	1,441,692	.....§Lukens Steel Co.
,265(x)	106,556(x)	1.47(x)	0.47(x)	0.19(x)	550,000	40.91	....	23,985,593	3,959,061	1,480,209	
,269(x)	1,703,108(x)	4.54(x)	8.22(x)	3.78(x)	450,000	46.03	....	23,239,304	3,570,907	1,856,064	.....Sharon Steel Hoop Co.
,996(x)	1,083,419(x)	2.89(x)	4.66(x)	2.41(x)	450,000	53.25	....	25,420,228	4,819,792	1,502,099	
,080(x)	1,052,080(x)	1.72(x)	0.57(x)	0.23(x)	450,000	41.40	....	28,250,844	5,115,908	1,065,561	.....Allegheny Steel Co.
228	50,228	0.30(x)	0.24	0.11	450,000	44.95	1.35	29,339,299	7,356,868	1,436,991	
,369(x)	318,078(x)	3.23(x)	1.18(x)	0.66(x)	480,000	55.94	....	28,817,214	3,621,070	1,390,937	.....Gulf States Steel Co.
,230(x)	658,539(x)	4.94(x)	2.35(x)	1.37(x)	480,000	57.41	....	29,916,218	3,906,252	1,516,754	
,327	13,827	0.05	0.16	0.04	360,000	24.33	1.00	9,404,775	3,862,394	221,503	.....Granite City Steel Co.
,319	332,319	1.28	3.64	0.92	360,000	25.36	2.00	9,862,050	4,083,000	285,409	
,27(x)	143,187(x)	1.74(x)	1.25(x)	1.46(x)	280,000	41.04	....	12,251,878	3,553,042	256,384	.....Continental Steel Corp.
,84(x)	277,119(x)	3.46(x)	2.36(x)	0.99(x)	280,000	42.25	....	12,509,242	3,660,574	268,233	
,782(x)	245,782(x)	1.23(x)	1.61(x)	1.23(x)	200,000	76.45	3.25	15,601,142	7,308,140	91,239	.....Midvale Co.
,116	750,116	3.75	4.57	3.75	200,000	82.02	4.00	16,866,024	8,123,454	220,022	
,31(x)	$116,175,256(x)		2.85(x)	1.87(x)	62,176,900	$65.51		$4,405,165,167	$828,242,769	$105,846,192	.....Total, 1932
,93(x)	17,405,647		0.40	0.28	62,556,300	67.64	. . .	4,682,614,968	1,024,517,953	150,614,998	.....Total, 1931
,20	198,775,599		4.54	2.59	60,110,855	65.57		5,865,211,497	1,225,241,179	242,122,676	.....Total, 1930

Year	Per cent earned on capitalization
1925	5.61
1926	6.86
1927	5.22
1928	6.55
1929	9.88
1930	4.54
1931	0.40
1932	2.85(x)

(x) Loss
‡ Fiscal year ends June 30
§ Fiscal year ends Oct. 25
(A) Fiscal year changed as of June 30, 1932, on latter date. Comparison of 1931 on basis of year ended Dec. 31.

DETERMINING THE TRANSMISSION OF HEAT IN INDUSTRIAL FURNACES

Part I

BY M. H. MAWHINNEY
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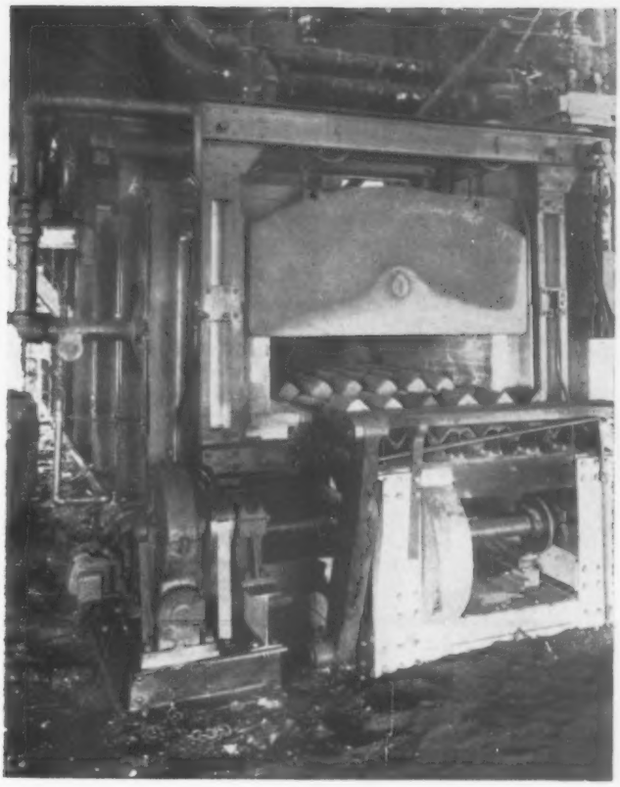


Fig. 1—A continuous pusher-type gas-fired forging furnace for heating 4½-inch square billets. Six rows of billets 9 inches long are exposed to the heat as shown. This furnace is No. 3 in Table I

A WEALTH of information on the mathematical derivation of the coefficient of heat transfer from industrial furnaces to material being heated is to be found in technical literature, but, unfortunately, practical application of this information fails in most cases to give reliable results.

All mathematical derivations are based on the fact that heat is transferred from flames or gases to the furnace walls and to the heating stock by both radiation and convection; and that a portion of the heat received by the walls is in turn radiated to the heating stock. The familiar Stefan-Boltzman law, based upon the difference of the fourth powers of the absolute temperatures, is employed in calculating radiation values and some form of equation based on the direct differences in temperature, degrees Fahr., generally serves in the determination of quantities of heat transferred by convection.

Use of these equations requires the assumption of "black body" coefficients, flame and wall temperatures, and other factors practically impossible to calculate, and it is in these assumptions that the mathematical method generally fails.

Haslam and Russell have shown in *Fuels and Their Combustion* that the mathematical method can be applied to furnaces in which very small charges are heated to obtain accurate values of heating rate, but state that for most industrial furnaces, in which the interior wall surface is efficiently utilized for heat transfer, the calculation becomes complicated and unreliable. In the case of a small charge, the rate of heating is controlled by radiation from wall to charge, and when the charge is large, the transfer from flame to wall is most important and most difficult to calculate.

The overall coefficient is the sum of the coefficients of transfer by radiation and by convection. The above reference gave the coefficient of convection as practically constant between 2.0 and 3.0 B.t.u. per square foot per hour per degree Fahr. temperature difference, when the area is that of the receiving surface. The coefficient of transfer by radiation in furnaces with small charges varies with the temperature of the furnace and lies between 3.5 for a 1000 degrees Fahr. furnace with charge at 0 degrees to 55.0 in a furnace at 2200 degrees Fahr. with charge at 2000 degrees. These values, however, do not apply in the usual furnace, as previously explained.

W. Trinks in *Industrial Furnaces Vol.* I, has outlined values of overall coefficient for various conditions of flame luminosity and temperature, with reservations as to their practical application. These values show less variation of the coefficient with nonluminous flames than with luminous flames, as would be expected. The variation is from 6.0 to 8.0 B.t.u. for

nonluminous flames with stock temperatures from 1200 to 2200 degrees Fahr. and gas temperatures in all cases 100 degrees higher than the final surface temperature of the stock. The same values for luminous flames with 100 degrees final head are 10.0 to 29.0 for the same temperature range.

Furnaces Large, Charges Small

An interesting article by G. Wagener in *Z. Metallkunde*, February, 1932, Vol. 24, Part 2, describes a series of experimental results similar to those to be described in this article. All of the tests, however, fall in the class where the charge is small compared to the size of the furnace. The values of the overall coefficient found in these tests when converted to English units, is about 10.8 B.t.u., when heating steel to 840 degrees Fahr. in a 960 degree furnace. The mean values for heating copper with 120 degrees Fahr. final head varied from 3.7 to 11.5 B.t.u. with a surface temperature variation from 390 to 1400 degrees Fahr. For aluminum, with 120 degrees final head, the overall coefficient was 5.5 B.t.u. when heating the aluminum to 840 degrees in a 960 degree furnace.

The purpose of the present article is to describe results derived from an investigation of the operation of a number of commercial furnaces to determine reliable experimental values of overall coefficient of heat transfer. Furnaces in which the charge was large with respect to the furnace were studied, for this type of furnace is the most common and the least understood. A method is also advanced for calculating temperature head, based on these experimental results.

A list was made of commercial furnace installations, the operation of which was well known to the writer and in which fairly complete temperature and production measurements had been made. In some instances, where tests were made before this study of heat transmission was contemplated it was necessary to etimate some of the data, but such estimates were used only where the knowledge of the probable values was considered reliable. The author believes the use of some such data is justified if it will inspire further exact research along practical lines.

For each furnace, the rate of heating in pounds of steel per square foot of hearth per hour was first determined by dividing the production from the furnace by the total area of the hearth. The rate of heat absorption by the steel was then calculated by dividing the heat content in B.t.u. of the steel heated to known temperature per hour by the constant effective receiving area of the steel in the furnace. This area was taken as the steel area in the furnace which is so located as to be capable of receiving heat by radiation or convection. A subsequent example will clarify this value.

The overall coefficient of heat transfer in B.t.u. per square foot of steel per hour per degree Fahr. difference was then found by dividing the above rate of heat absorption by the difference between the mean temperature in the furnace and the mean temperature of the surface of the steel as it passes through.

Calculation Is Demonstrated

As an example of the method of calculation we will take furnace No. 3 in Table I. In this furnace steel billets 4¼ inches square and 9 inches long are pushed end to end in six rows in the grooves illustrated by the interior view of Fig. 1. The inside dimensions of the furnace are 4½ feet wide by 20 feet long, so that the rate of heating with a production of 3420 pounds heated per hour is 38.0 pounds per square foot per hour. The final steel temperature was 2240 degrees Fahr., at which temperature the heat content is 350 B.t.u. per pound.

Area 75 Per Cent Effective

The total area for all four sides of the billets in the six rows is 6 x 4 x 4¼ x 240 inches long = 24,500 square inches or 170 square feet. An assumption is made at this point that the effective receiving area is 75 per cent of the total area for the position of the billet in the groove of the hearth, as shown in Fig. 1. The absorbing area, therefore, is 75 per cent of 170, or 127 square feet. The rate of absorption, therefore, is:

$$\frac{3420 \text{ lb./hr.} \times 350 \text{ B.t.u./lb.}}{127 \text{ sq. ft.}} = 9450 \text{ B.t.u./sq. ft./hr.}$$

The temperature in the furnace was 2300 degrees Fahr. at the hottest point and the mean temperature through the furnace length was 2200 degrees Fahr. The mean temperature of the surface of the steel was 1440 degrees Fahr. The difference is 760 degrees and the overall coefficient of heat transfer is:

$$\frac{9450}{760} = 12.4 \text{ B.t.u./sq. ft./hr./ deg. F.}$$

Table I gives the complete data and calculated results for the furnaces which were studied. In all of the furnaces of this list the steel was charged cold. The effect of preheated stock is discussed later. In most of these furnaces the total area of the stock in the furnace could be used in calculating the heat absorption, because the material was conveyed or supported so that each piece was exposed to the heat on all sides. Correction for effective area was made where necessary, however,

Table I

Complete Data and Calculated Results for Furnaces Studied

No. of Furnace	Fuel Utilized	Purpose of Furnace	Product Heated	Type of Furnace	Furnace Temperature Deg. Fahr.	Rate of Heating, Lbs./Sq. Ft./Hr.	Overall Coefficient, B.t.u./Sq. Ft./Hr./Deg. Fahr.*
1.....	Oil	Forging	2½ x 2½-inch billets	Pusher	2400	41.6	13.6
2.....	Oil	Forging	2½ x 2½-inch billets	Pusher	2500	83.0	20.7
3.....	Natural gas	Forging	4¼ x 4¼-inch billets	Pusher	2300	38.0	12.4
4.....	Coke oven gas*	Forging	2-inch diameter bars	Batch	2300	80.0	25.8
5.....	Oil	Rolling	4 x 4-inch billets	Batch	2200	33.7	10.0
6.....	Natural gas	Annealing	20-inch diameter rolls	Car	1750	6.9	9.6
7.....	Oil	Forging	44-inch diameter ingots	Batch	2350	26.0	18.0
8.....	Oil	Forging	10 x 4½ x 2½-inch bars	Rotary	2400	60.0	18.9
9.....	Natural gas	Normalizing	Stainless steel sheets	Rotary	2040	5.8	2.4
10.....	Electricity	Hardening	Rollers in pans	Pusher	1550	32.7	12.4
11.....	Oil	Hardening	Axles	Pusher	1400	24.2	8.7
12.....	Natural gas	Normalizing	Axles	Walking beam	1650	29.3	10.3
13.....	Oil	Drawing	Axles	Pusher	1060	27.0	12.0
14.....	Naturalgas	Drawing	Axles	Walking beam	825	23.5	7.1
15.....	Natural gas	Annealing	20-inch diameter retorts	Car	1380	5.9	3.8
16.....	Natural gas	Normalizing	Strip steel	Chain	2000	53.3	19.5
17.....	Electricity	Normalizing	Strip steel	Roller	2100	83.3	20.5
18.....	Natural gas	Normalizing	9¾-inch diameter pipe	Sloping hearth	1750	15.2	7.3
19.....	Producer gas	Rolling	12 x 12-inch blooms	Pusher	2200	58.0	21.5

*This furnace was fired with radiant flame burners.

as in the continuous forging and rolling mill furnaces where the pieces were pushed side by side and only the top and bottom were effective.

An exception is the case of No. 1 and No. 2 in which spacers were used between all billets and the entire area was effective. In example No. 9 the sheets were held several inches off the bottom to permit circulation but only 75 per cent of the total area of both sides was considered effective to allow for the difference in radiation to the two sides.

Fig. 2 was prepared to show the relation between the rate of heating and the overall coefficient for the examples of Table I. When the points, numbered the same as in the table, are plotted, they appear to show a consistent relation to exist between rate of heating and the coefficient, and the solid curve was drawn to represent this relation. Examination of the points which depart widely from this curve indicates the reasons for the discrepancies.

No. 4 is for a forging furnace fired by means of the so-called luminous or radiant burners, which have recently attracted so much attention to a by no means recent idea, and support the claim that the rate of heat transfer is increased by this type of combustion.

Large Pieces, Long Heating

Example No. 6 is for a large charge of 53 tons of steel heated for 35 hours in the furnace and No. 7 is also for a large charge of 17 tons heated for 23 hours. In both cases the charge was made up of a very few pieces (one piece in example No. 7) and the tentative curve shown by a dotted line is given to show the apparent relation for this rather unusual class of furnace operation, involving large pieces with a long heating cycle.

The explanation of the high values for overall coefficient probably lies in the fact that the temperature difference between the furnace and surface of the steel is small for a long period of time while the interior of the steel is coming to temperature. The mean temperature difference, therefore, is comparativly low, with high coefficients obtained when this difference is divided into the heat absorption value.

Table II

Relation of Furnace-Stock Ratio to Coefficient

No. of Furnace	Area in Sq. Ft. Wall	Stock	Ratio	Coefficient
1.....	273	175	1.56	13.6
3.....	206	127	1.62	12.4
5.....	255	197	1.30	10.0
6.....	1646	572	2.88	9.6
7.....	345	130	2.65	18.0
8.....	171	40	4.26	18.9
9.....	1296	540	2.40	2.4
10.....	86	52	1.66	12.4
11.....	454	459	0.99	8.7
12.....	228	114	2.00	10.3
13.....	454	470	0.97	12.0
14.....	260	140	1.86	7.1
15.....	890	708	1.26	3.8
16.....	285	81	3.53	19.5
17.....	108	30	3.60	20.5
18.....	3422	2880	1.19	7.3

The effect of temperature and of the ratio of *wall area* to *stock area* on the coefficient of heat transfer has been discussed by other writers on the subject, and Fig. 3 has been prepared to show the effect of these factors for the examples of Table I. The respective values for the coefficient plotted against final furnace temperature are shown by the small black dots in this illustration. It will be seen that these points indicate a definite increase of coefficient with furnace temperature, although the points are rather widely distributed and no very definite relation is established.

The effect of the ratio of interior refractory area of the furnace to effective heat absorbing area of the stock on the overall coefficient is shown by the crosses in the illustration. Again, a definite increase in coefficient with value of the ratio, but the points are again not in a definite straight line relation. The data for the latter relation are given in Table II.

(To be concluded)

Inch-Millimeter Ratio Approved as Standard

The inch millimeter conversion ratio of 25.4, recommended for adoption as a national standard for industrial use by a general conference of industry held in New York last October under the auspices of the American Standards association (STEEL, Dec. 19, 1932), has just been approved as an American standard by the association.

The standard includes conversion tables and recommendations for the rounding of converted values.

A standing committee appointed by the conference, headed by C. B. Veal, Society of Automotive Engineers, New York, as chairman, is planning to recommend the publication by the American Standards association of more extensive standard conversion tables based on the ratio 25.4, and also the application of the system of rounded numerical values included in the standard to industrial work in general.

Develops New Tool Line

Development of a complete line of tantalum carbide tools for cutting, drawing and working metals has been announced by the Ramet Corp., Chicago, subsidiary of Fansteel Products Co., North Chicago. Six different grades can be supplied for various types of machining work; in addition, wire, tubing and extrusion dies have been developed.

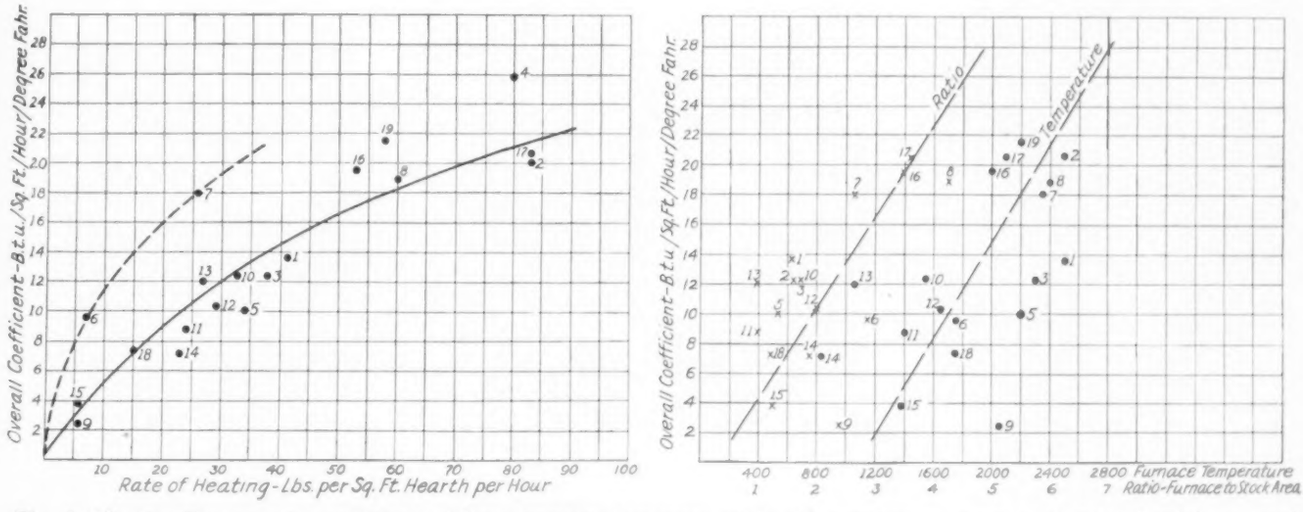


Fig. 2 (Left)—The overall coefficient of heat transfer increases with the number of pounds of steel heated on each square foot of hearth every hour. Fig. 3 (Right)—The overall coefficient of heat transfer increases rapidly with furnace temperature, and when the area of the furnace walls is greater than the area of the heated steel

Machine Renders Sheets Free From Stretcher Strains

BY JOHN D. KNOX
Associate Editor, STEEL

FREQUENTLY when sheets are subjected to the action of forming dies and are drawn or stretched to the required shape, the grain structure yields unevenly producing the effects of lines and designs in intaglio. These lines, known as stretcher strains, are difficult to conceal with enamel or paint.

The regular practice of the rolling mills in producing a full-finished autobody sheet, consists of a number of processes including cold rolling and roller leveling. In the early stages of mass production it customarily was assumed that a full-finished sheet thus produced would meet every requirement. However, as the automobile industry developed, along with the introduction of lacquer finishes, one of the greatest difficulties encountered by the stamping companies was the development of stretcher strains in the finished stampings. Research disclosed that while the mill practice of cold rolling and roller leveling actually put the sheet in good condition for drawing without the development of strains, the material would remain in this condition for only a short time.

Sheets Are Roller Leveled

As a result of this phenomena, many automobile body builders and stamping producers have installed roller leveling machines through which the sheets are passed just prior to subjecting them to the stamping or forming operation. Cold distortion of the sheet disrupts the setting or congealing of the amorphous material in the metal and if this is followed by the forming process within a definite period, the grains flow evenly thus affording a remedy for stretcher strains.

While roller leveling machines assist fabricators in securing a suitable texture in steel sheets yet the mechanical work accomplished by this unit is not satisfactory to make the sheet altogether immune from surface blemishes after forming. Consequently, within the past few years two improved methods for eliminating stretcher strains in steel sheets were developed—the Guibert method of the McKay Machine Co., Youngstown, O,. and the Kelley method of the Edward G. Budd Mfg. Co., Philadelphia.

The Guibert method employs a machine similar to a roller leveler but with the rolls arranged as a series of pinch rolls in different planes so that the sheet in transit through the rolls is deflected above and below the plane of travel while the sheet is under tension. The flexing action changes the grain structure so that when the steel is drawn under dies to the desired contour, no stretcher strains occur.

The Kelley method initially works the sheet which involves a severe reverse bending operation progressively throughout its entire area and to a much greater degree than is afforded by the regular roller leveling machine. After being flexed throughout its entire length and area so that its elastic limit is exceeded greatly, the sheet passes through staggered rollers and then is formed to the desired contour. But despite the acute bending and thorough roller leveling, the sheet displays a tendency to return to its initial condition. To secure the full benefit of the bending and leveling operations, therefore, the sheet is pressed to shape shortly thereafter.

Features Are Combined

A combination of the desirable features associated with the machines employed for eliminating stretcher strains in sheet metal by the two foregoing methods, recently were incorporated by the McKay Machine Co. in a single unit known in trade circles as the Budd-McKay sheet processing machine. An elevation of the newly designed machine is shown in Fig. 1.

At the front end of the machine is

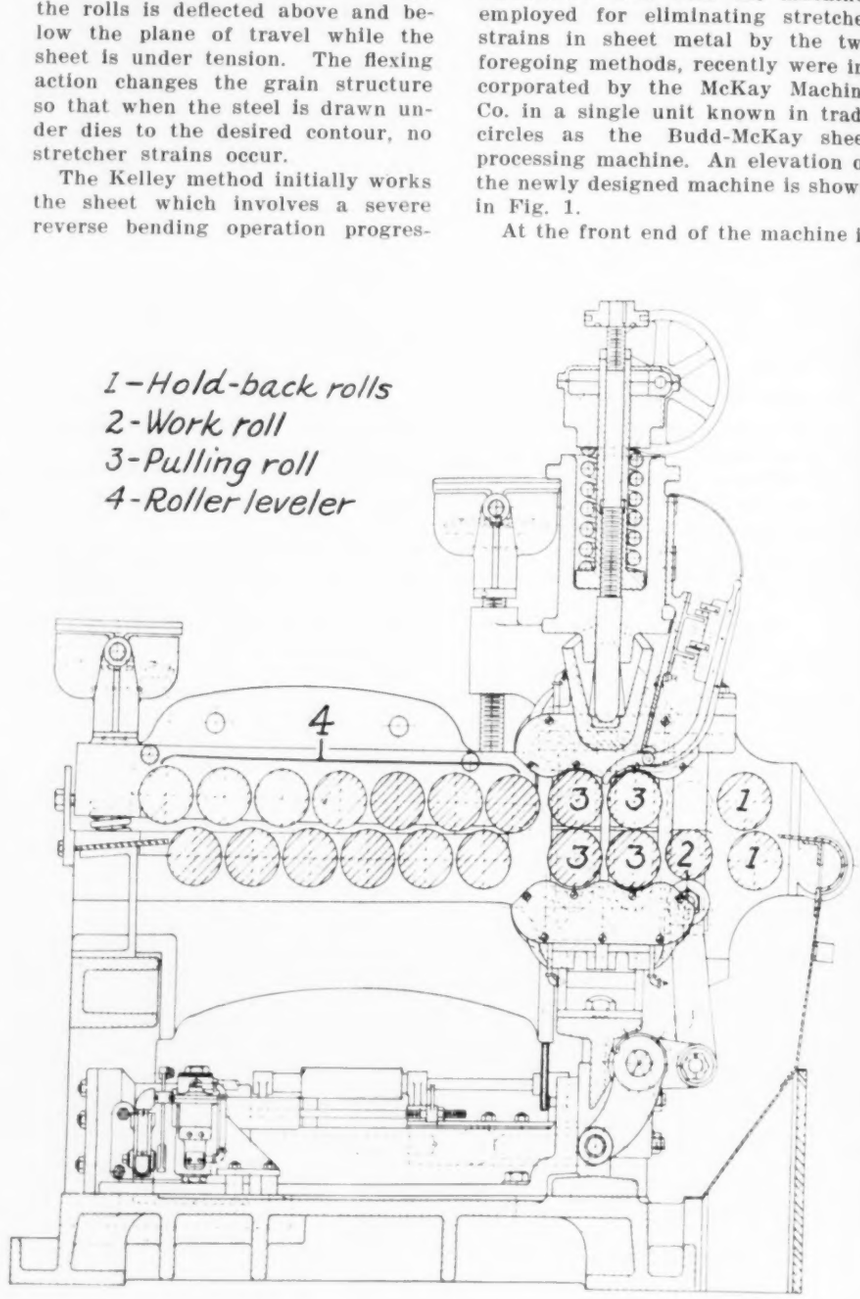


Fig. 1—Elevation of a recently developed machine for processing sheets. Flexing of the metal is carried further beyond its elastic limit than heretofore has been possible in roller leveling practice, thus affording greater freedom from stretcher strains

located a pair of hold-back rolls, designated 1, and two adjacent sets of pulling rolls, designated 3; all mounted in the same plane. Between the hold-back and pulling rolls is a single auxiliary work roll, designated 2, which in its idle position is located beneath the path traveled by the sheet.

In operation a sheet is fed between the hold-back rolls and into the gap of the pulling rolls which draw it into the machine. After the sheet has progressed to the pulling rolls, the work roll automatically is shifted from its idle position into its upper or working position, shown by the dotted contour in the illustration. This causes the sheet to go into a loop around the exit side of the hold-back rolls, upward over the work roll and downward around the top pulling roll of No. 1 set and thence into the machine.

Steel Is Kneaded

The double bending or flexing of the sheet as it passes in and out of the loop kneads the steel and imparts the desired amount of cold plasticity. The second set of pinch rolls directs the sheet into the roller leveling machine where it is bent up and down repeatedly and finally ejected with a flat set.

The progressive advancement of the bend throughout the area of the sheet followed by a pass through the roller leveler, permits the flexing to be carried further beyond the elastic limit of the steel than heretofore has been possible by a roller leveling machine, thus affording greater freedom from stretcher strains.

The following brief theoretical discussion offers some explanation of the principle involved. For some hours after the sheet is cold worked far beyond its elastic limit the metal shows no yield point in its characteristic curve, which is of regular outline up to the point of ultimate strength. Coincident with the changes in elasticity, characteristics brought about by this cold work or overstrain, is a change in the elastic properties of the metal until a point approaching a disappearance of the yield point is reached where the metal partakes in general of that characteristic known as "cold plasticity."

Strains Are Precluded

When steel is relatively in this general state of cold plasticity the occurrence of stretcher strains always is precluded. Introducing this characteristic of cold plasticity at the start of the process, permits the metal to be worked to a sufficiently high degree and at the same time gives the roller leveler its full opportunity to smooth out the curvatures resulting from the cold working at the time it straightens out the ordinary surface irregularities for which the usual leveling operation is intended. The greater the degree to which the working for cold plasticity is carried out, the longer the period of reversion during which the metal may be stamped without the formation of stretcher strains.

Sheet or strip steel is always in a low state of cold plasticity after annealing, and it is customary to give the sheet a number of passes through the cold rolls to render the metal plastic for drawing. Cold rolling hardens the steel and for each pass through the cold mill the drawing quality is lowered in proportion as the hardness increases. On the other hand, extreme transverse bending obtains the maximum of cold plasticity with practically no hardening effect, the steel retaining all the drawing quality of the soft annealed sheet. The accompanying photomicrographs show the effect of cold plasticity of steel sheets in various stages of cold finishing. Fig. 2 is an automobile body sheet, box annealed as the last operation. The heavy strained condition was caused by drawing the sheet, slightly elongating it. Fig. 3 is a sheet from the same box annealed heat that partially has been processed and drawn the same amount as the sheet shown in Fig. 2.

The sheet shown in Fig. 4 is from the same box annealed heat processed to a state of complete cold plasticity, and drawn the same amount as the sheets shown in Figs. 2 and 3. The steel is free from strains and has all the original drawing qualities.

To Develop Standards for Insulating Refractories

Definite decision to begin work on the preparation of tests and specifications for high-temperature insulation and for insulating refractories was made at a meeting of committee C-8 on refractories of the American Society for Testing Materials held in Pittsburgh recently.

Development of good refractory insulations is one of the most important late achievements in the refractories field. Many new products now on the market are reported to be saving operating costs especially in intermittently operated furnaces by the use of insulation. In numerous cases these insulations are so refractory that they have been used to face the flame with or without a thin refractory cement. Savings reported in heat treating furnaces, for example, are said to be phenomenal.

Three proposed tests for use in specifications were submitted at the meeting. They cover shrinkage under heat treatment; transverse strength; and crushing strength.

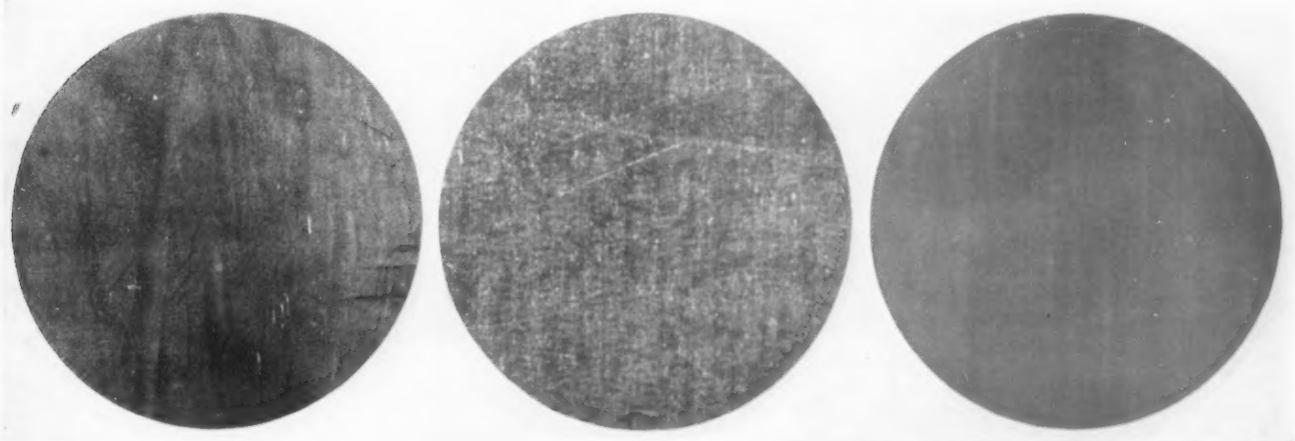


Fig. 2—Photomicrograph of a box annealed sheet of autobody quality. Slight elongation of the metal by drawing imparted the stretcher strain lines as shown. Fig. 3—Photomicrograph of sheet from same box annealed heat, partially processed and drawn the same amount as sheet in Fig. 2. Fig. 4—Photomicrograph of sheet from same box annealed heat, processed to state of cold plasticity and drawn same amount as sheets shown in Figs. 2 and 3. Steel has been rendered free from strains and has original drawing qualities

Grain Size Affects Forgings Quality

GRAIN size appears to be much more important than the chemistry of the steel used in forging automotive gears, recent experience having indicated that the coarser-grained material forges with less tearing and produces sounder and more ductile gears. Machinability also is improved.

These observations were reported by W. E. Sanders, plant and metallurgical engineer, Buick Motor Co., Flint, Mich., in presenting a paper, "Gears and Gear Forgings," before members of the Cincinnati, Dayton and Columbus chapters of the American Society for Steel Treating holding their annual tri-city meeting in Cincinnati, April 13.

The Buick plant has standardized on a No. 4 McQuaid-Ehn grain size, the range being No. 3 to No. 5. Results in the quality of gears have been found to be uniform with chromium, nickel, molybdenum and low carbon steels; vanadium has not been tried.

Costs have been decreased and production increased in upsetting by using smaller bars and four or five passes in the upsetter, in place of large stock and two or three passes. In hammer forging gears from these blanks, die life has doubled. The annealing cycle has been reduced from 12 to 13 hours to 8¼ hours. These gears are hardened and quenched in oil and show less distortion.

Practically all grinding of gears has been eliminated and shortly it is expected the balance will be dispensed with.

"Sheet Metal and Its Performance" was discussed by Thomas Dockray, metallurgist, Eastern Rolling Mill Co., Baltimore, at a second technical session. The meeting was concluded with a dinner in the evening at which Prof. H. M. Boylston, head of the department of metallurgy, Case School of Applied Science, Cleveland, spoke on recent advances in metallurgy.

Tool Engineers Elect New Officers for 1933

William H. Smila, tool engineer, Chrysler Corp., Jefferson plant, Detroit, has been elected president of the American Society of Tool Engineers. Frank Hartlep, chief tool engineer, Timken-Detroit Axle Co., Detroit, was named first vice president, and T. B. Carpenter, assistant tool supervisor, General Motors Truck Corp., Pontiac, Mich., second vice president.

Joseph F. Slavik, sales engineer, Warner & Swasey Co., Detroit, is the new treasurer, with A. M. Sargent, president and general manager, Pioneer Engineering & Mfg. Co., Detroit, re-elected secretary.

Retiring president, J. A. Siegel, assistant chief tool engineer, Packard Motor Car Co., Detroit, has assumed chairmanship of the meetings committee.

Organized less than a year ago to advance the arts and sciences in tool engineering, the society has made substantial progress despite conditions. It is represented in 15 states and five foreign countries and lists in its membership executives in production and tool engineering from practically all the major industries.

Headquarters of the society are at 8316 Woodward avenue, Detroit.

Arrange Second Meeting On Lubrication

The second national lubrication engineering meeting is to be held at Pennsylvania State college, State College, Pa., May 25-26, under joint auspices of the college and the lubrication engineering committee of the petroleum division of the American Society of Mechanical Engineers.

Among subjects to be considered at the five sessions are lubrication of roll necks, machinery, gears and wire rope and specifications and standards for lubricants. Arrangements for the conference are in the hands of F. G. Hechler, Pennsylvania State college.

Papers and speakers are listed as follows:

"Practical Interpretation of Lubricant Specifications," by J. G. O'Neill, United States Engineering Experiment Station, Annapolis, Md.

"Machine Design for Lubrication," by E. M. Barber and C. C. Davenport, Pennsylvania State College.

"Roll Neck Lubrication," by W. D. Hodson, Hodson Corp., Chicago.

"Lubricant Viscosity Standardization for Industrial Equipment," by Dr. A. E. Becker, Standard Oil Development Co., New York.

"Applications of Extreme Pressure Lubricants to the Lubrication of Industrial Machinery," by Dr. O. C. Bridgeman, bureau of standards, Washington.

"Problems of Lubricating Heavy-Duty Gears," by Austin Kuhns, Farrel-Birmingham Co., Buffalo.

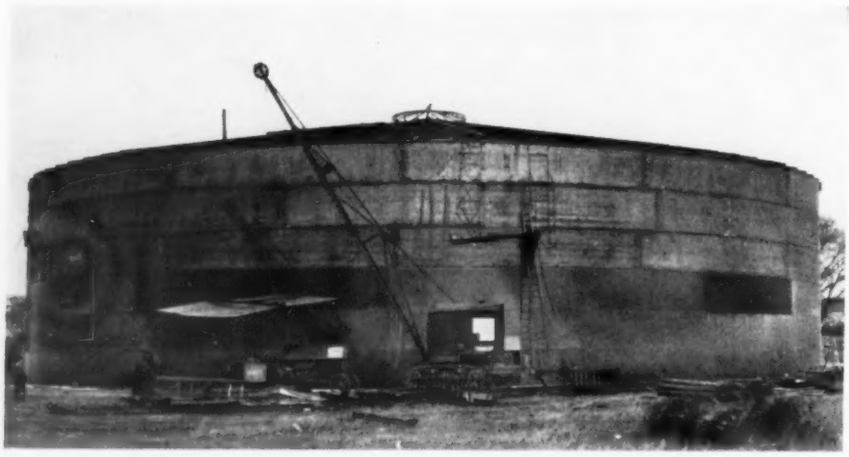
"Wire Rope Lubrication," by A. J. Morgan, John A. Roebling's Sons Co., Trenton, N. J.

"Discussion on Friction of Wire Rope in Sheaves," by L. M. Tichvinsky, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Some Practical Factors Affecting Design and Operation of Bearings for Large Rotating Apparatus," by T. W. Gordon, General Electric Co., Schenectady, N. Y.

Investigate Steel House For Earthquake Area

Mills G. Clark, president, Insulated Steel Inc., Cleveland, originator of the frameless steel house (STEEL, Aug. 8, 1932, p. 21), has made a study of construction requirements in the earthquake area of Southern California. He was accompanied by representatives of American Rolling Mill Co., Middletown, O., who assisted in ascertaining whether steel house construction would resist earthquake shocks and whether this type of construction could be applied to buildings.



ELECTRIC ARC WELDED WATER TANK HOLDS 6,000,000 GALLONS: Recently completed by the city of Milwaukee, this all-welded tank is 165 feet in diameter, 37½ feet high at the periphery. Erection and welding was performed by A. O. Smith Corp.; welding machines were supplied by Harnischfeger Corp. Foundation is concrete, asphalt and ⅜-inch steel plates. Lower row of sheets in the sidewall is 1 3/16 inches thick, each succeeding row being somewhat thinner to provide space for welding bead inside and out. Roof is of welded sheet steel supported on structural framework. Finished height is 57 feet 3 inches from ground to top of cupola. Over 700 tons of steel were required for the complete structure. Crawler cranes were used to hoist materials into position

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part V—Open-Hearth Furnace Lines

(Twenty-Ninth Article of Series)

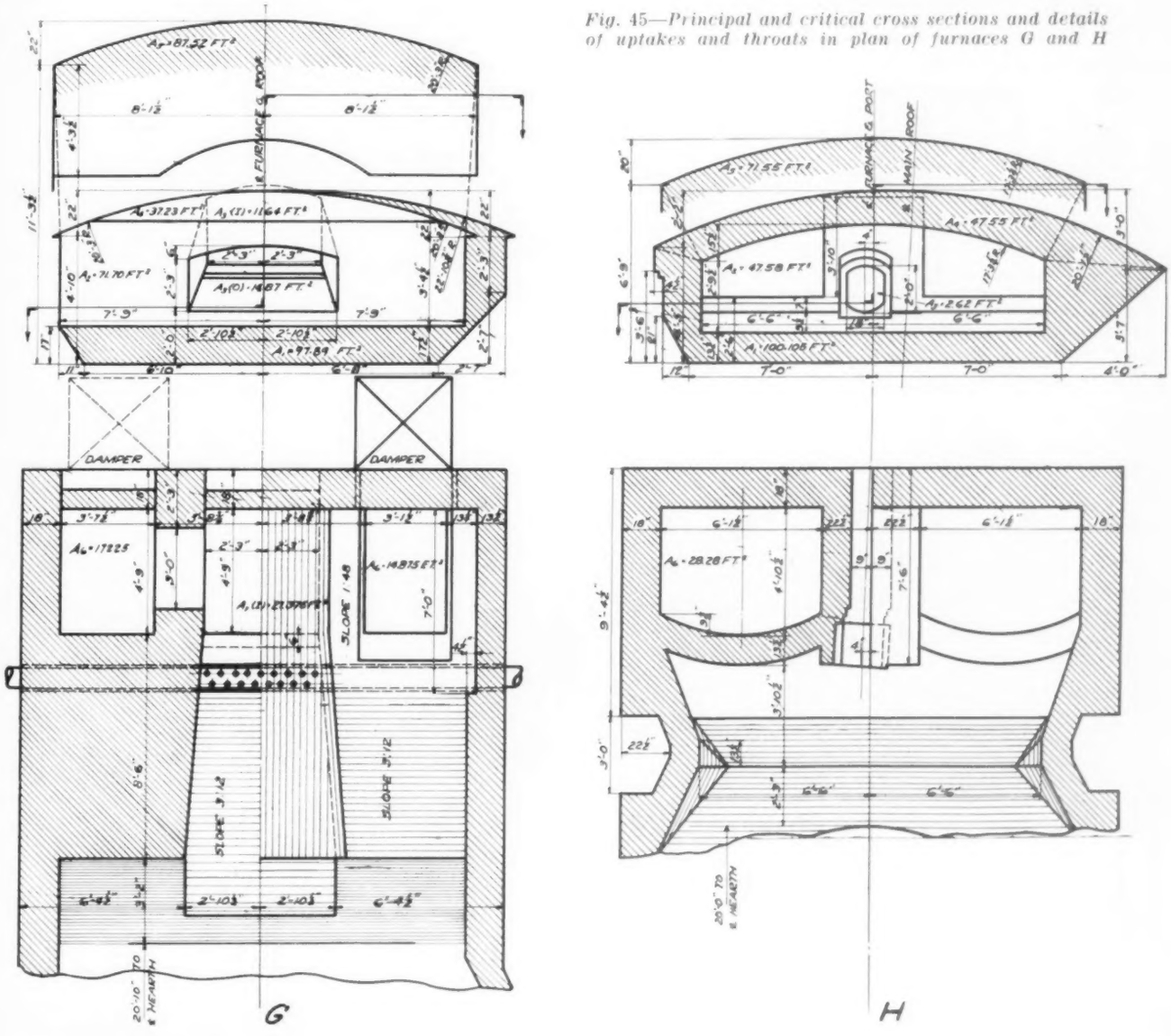
THE areas A_2 are those at the ends of the bath through which on the one hand the air, fuel and developing combustion enter the furnace laboratory and on the other hand the furnace gases, and those developed within the bath at higher temperature and greater specific volume than when entering, leave the furnace laboratory to find their way to the downtakes. The reduction of area apparent at these points is accomplished by the development of the roof knuckle, the monkey walls and the end bank.

An ideal furnace would show a smaller area, A_2, on the incoming furnace end in order to accomplish the most satisfactory combustion condition. At the outgoing end the area of A_2 would be relatively large in order that the erosive effect of the high temperature gases with the gas-borne inclusions would be minimized by low-velocity flow and excessive furnace pressures prevented.

Areas Should Be Similar

On account of the inherent necessity of reversing the furnace, thus causing each area A_2 to alternately be the incoming and outgoing end, it is essential that the area at both ends be the same in a given furnace. The area, therefore is developed as a compromise and as such can never be the best for either function it is called upon to perform. Various devices have been patented and tried to accomplish a change of this area with the operating cycle but thus far none have held even a vague promise of ultimate success. It is doubtful if a method to accomplish this most desirable change of area at each reversal ever can be applied in the conventional-type furnace. However, a

Fig. 45—Principal and critical cross sections and details of uptakes and throats in plan of furnaces G and H



generic change in furnace design never will be successful unless it provides in essence for the accomplishment of this factor, as is done for example in furnace C which eliminates knuckles and monkey walls and allows a maximum unrestricted area for the outgoing gases.

Considered as Unity

The operating importance of area A_2 causes it to be used as the basis of any comparisons of interior areas and consequently it is considered as unity. The variations of area A_2 in square feet as developed for the listed furnaces are from 45.16 to 85.60 or 1.0 to 1.9. The actual operating areas at A_2 as shown for furnaces G, I and L probably are considerable less than as given.

When the furnaces are fired with producer gas, specifically A, J, K, N and O the area A_3 is the area of the developed nozzle where the fuel is emitted into the air stream. When the furnace gases are flowing outward from the furnace it is also the opening into the downtake duct leading to the gas regenerator. With producer gas entering the gas regenerator at 1000 to 1200 degrees Fahr. or more initial temperature, the proportionately small area at A_3 is proper to admit a waste-gas volume large enough to maintain a regenerator temperature sufficient to produce a satisfactory final producer gas temperature.

However, when a fuel such as mixed blast furnace-coke oven gas enters the gas regenerators at atmospheric temperatures and is to be preheated to highly elevated temperatures the small area at A_3 is not large enough to admit a sufficient volume of waste gas to elevate the temperature of the gas checker brick to the desired degree, and consequently, an arrangement such as the Rose sliding port used with furnace L is employed. In this arrangement the port is in position only when firing and when the furnace is reversed the port is withdrawn, thus presenting a much greater duct area for the flow of the waste gas to the regenerator. It is evident that the particular advantage of such an arrangement lies in the possibility of a better combustion condition through careful port development.

Figs. 45*K* to 45*P* will be presented in subsequent issues.

(To be Continued)

Weld 210-Mile Pipeline

Rapid progress is reported on the arc welding of 210 miles of 8-inch pipeline for the Phillips Petroleum Co., Bartlesville, Okla., extending from Oklahoma City, Okla., to Thrall, Kans. Welding is being done by H. G. Price Inc., Bartlesville, using the shielded arc process, with welding machines and electrodes supplied by Lincoln Electric Co., Cleveland. Time required for completion of the work will be about 75 days.

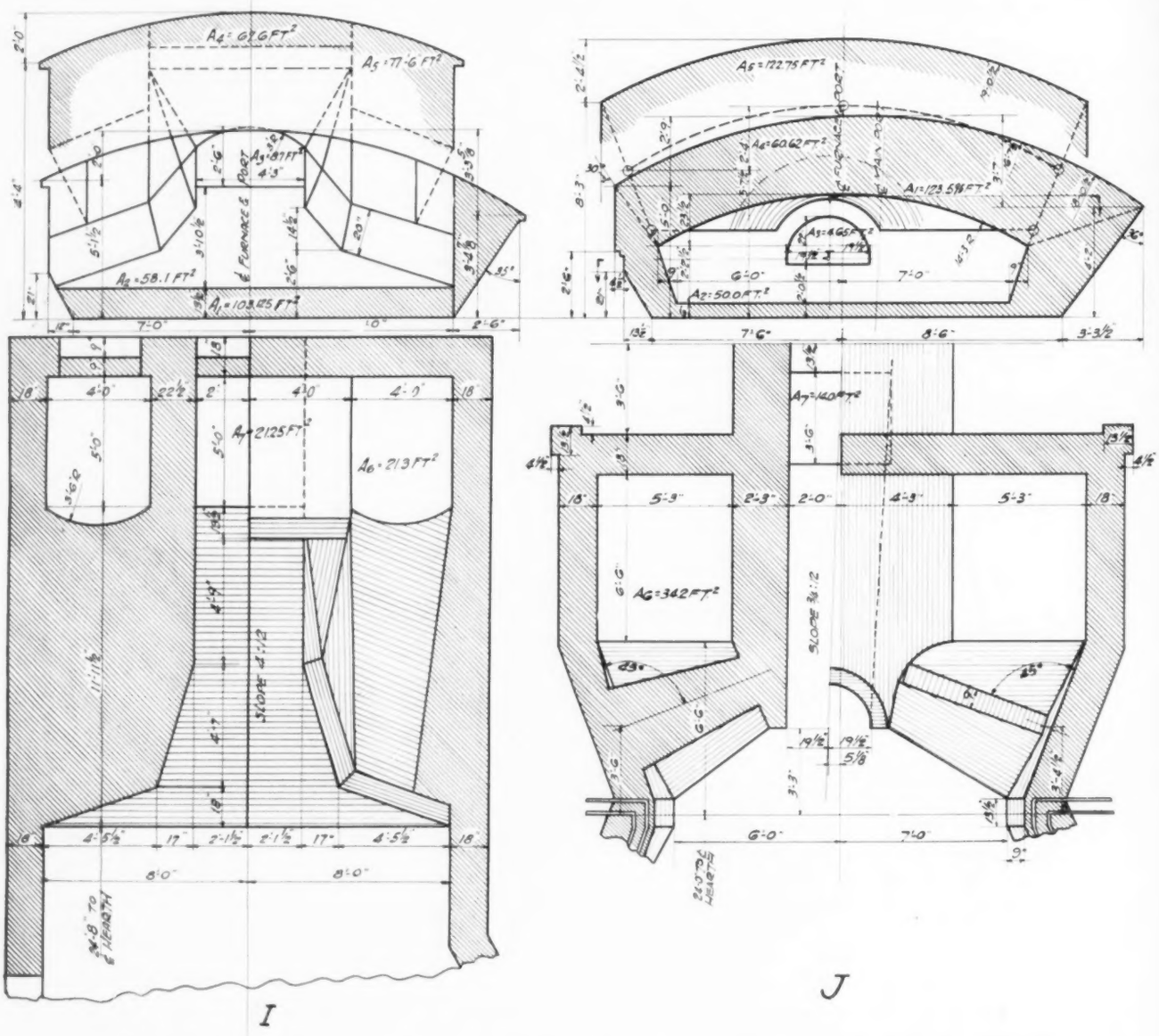
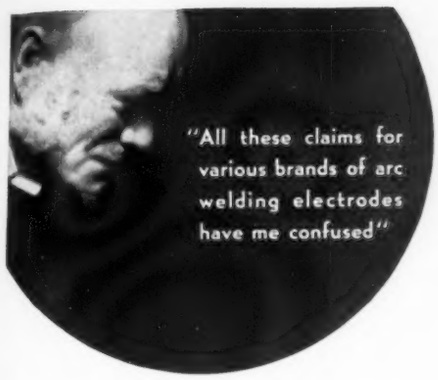


Fig. 45—Principal and critical cross sections and details of uptakes and throats in plan of furnaces I and J



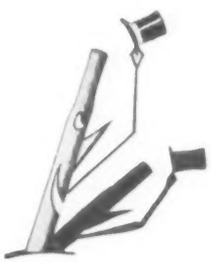
"I am 'FLEETWELD'. . . a shielded arc electrode that welds 2 to 3 times faster than bare or washed rods. I deliver a weld tensile strength of 65,000 to 80,000 lbs. per sq. in. . . . Ductility of 20% to 30% elongation in 2". . . Resistance to corrosion greater than mild rolled steel . . . Resistance to shock and fatigue equal to that of mild rolled steel. Thousands use me because I produce highest quality welds at low cost. Try me!...the name is '*Fleetweld*'."

"I am 'ALUMINWELD'. . . how could you guess I work on aluminum . . . castings, sheets and rolled shapes. I should be high-hat, because the high quality of my work makes me exclusive . . . puts me in a class by myself. My welds look smart, no discoloration when polished, but really they're very dense . . . that's why smart men order '*Aluminweld*'."

"I am 'MANGANWELD'. . . as my name implies I am used to weld manganese steel . . . build up worn parts . . . and all kinds of similar jobs. I operate in a shielded arc . . . produce a flat bead with no surface checks . . . My welds are solid . . They're tough . . They're hard . . and get harder when cold worked . . . Resist wear as well as heat treated cast manganese steel. Give me a chance to prove my statements . . . ask for '*Manganweld*'."

"I am 'HARDWELD'. . . when hard, tough, shock and abrasion-resisting surfaces are wanted they call for me to build 'em up. On rail or similar steel my welds are h-a-r-d . . . Hardness increases on cold working or quenching, yet my welds do not spall or check . . . I make a flat bead which cuts grinding costs. Remember . . . the name's '*Hardweld*'."

"I am 'STAINWELD A'. . . 18-8 stainless steel is my meat. Grind my welds, then polish, then try to find 'em . . . that's how close they are in all respects to the base metal . . . strength, ductility and corrosion-resistant qualities are virtually the same. For 18-8 stainless, order me . . . '*Stainweld A*'."



"I am 'LIGHTWELD'. . . sheet work is my specialty, 18 ga. to 24 ga. In weld appearance I'm a smoothie. Being faster than fast, I'm easy to work with and don't burn through. Some call me 'Mac' cause my welds are so tight, but when you order ask for '*Lightweld*'."

LINCOLN

THE LINCOLN ELECTRIC COMPANY, CLEVELAND, OHIO

Largest Manufacturers of Arc Welding Equipment in the World

W-38

Making the Most of

METHODS AND MATERIALS

A NEW alloyed wrought iron, developed recently and now being produced, promises to broaden the field of application for wrought iron. While the strength of this material has been increased by at least 25 per cent, with increases of 40 to 50 per cent in the case of heat-treated nickel wrought irons, this has been attained without corresponding loss in ductility, resistance to impact or endurance under vibratory stresses. The characteristic fibrous structure of wrought iron is in no way changed. The resistance to corrosion of the new irons is said to be equal or superior to that of ordinary wrought iron. One of the advantages of wrought iron, of course, lies in the ease with which it can be welded and the new nickel irons have been found to lend themselves readily to welding both in the forge fire and autogenously.

S S S

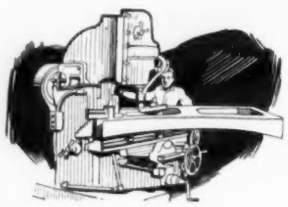
Costs of cleaning lighting fixtures vary, but taken alone they seem to average in the neighborhood of 4 per cent of the total operating costs of a lighting installation. If, as it seems probable, such cleaning will in itself increase illumination 20 to 25 per cent, then the results pay for the expenditure four or five times.

S S S

RECENT installation of the tungsten carbide equipped automatic boring machine in an electric refrigerator manufacturing plant not only guaranteed the maintenance of rigid standards of quality but effected substantial savings. The machine was tooled with tungsten carbide cutters to bore the two ends of the compressor crankcase, the crankcase end cover, and the babbitted big end and the bronze bushed small end of the connecting rod. Average production is 47 of each part per hour, with tolerances on the various holes running from 0.0002 to 0.0005 inch. In addition to improving the quality of the product, the machine has decreased the cost of the operations approximately 60 per cent.

S S S

Confronted with the problem of making accurate blanking dies for sheet metal, because dies made in the usual way sometimes warp in heat treatment, a toolroom foreman developed the idea of grinding the die outlines on a profile machine which is a type of miller with a vertical spindle. A former pin bears against a templet of the desired outline and this causes the cutter to mill an identical outline. In adapting the machine for grinding, an internal grinding head is substituted for the cutter. To assure accuracy, the former pin and the grinding



wheel must be of exactly the same diameter; further, the radius of the pin and wheel must never be greater than the smallest radius on the die outline. By this process the outline on the die is first worked out by drilling and filing, allowing at least 0.01 inch for grinding; then the die is heat treated in the usual way. Finally, the die is placed in the profile machine and the exact contour ground in accordance with the templet. As the grinding wheel wears down, it is dressed by a definite amount and used with another former pin of equal diameter.

S S S

A photoelectric pyrometer developed recently for measuring temperatures of incandescent bodies is suitable for continuously indicating or recording temperatures from 1500 degrees Fahr. upward, and responds instantaneously to temperature changes. This equipment consists of a phototube in a special housing, an enclosed panel mounting for the amplifying equipment, and an indicating or recording meter. A glow tube is included on the panel to minimize the effect of line-voltage variations. The equipment can be adapted to the control of devices in response to temperature changes by addition of one or more small thyratron tubes on the panel. In use, the phototube is mounted so as to receive direct radiation from the hot body. Since the total radiant energy from a hot body varies as the fourth power of the temperature, the change in the photo-tube current for a given temperature change is far greater than if the energy and temperature were directly proportional.

S S S

RESEARCH has shown certain alloy steels can be hardened appreciably by cooling to low temperatures. Tests were made mainly on chromium-nickel, nickel-silicon and other corrosion-resisting steels. Not only were the alloys hardened without discoloration but unusual physical and corrosion-resisting properties developed. The machinability of the metals also was improved in some cases by the methods. Temperatures of 112 degrees Fahr. were used.

S S S

Military tanks built during the World war had a track life of from 100 to 200 miles, whereas from 2000 to 3000 miles can now be expected. It has been found that a short-pitch track of drop forged nickel-chromium steel is the best from the standpoint of wear, resistance to cracking and quiet operation.

S S S

Cast iron and plain carbon steel are commonly used in the mining industry for parts subject to repeated heating and cooling. This results in growth and distortion which are objectionable. Recent results show that the addition of 1.25 per cent chromium to cast iron practically eliminates this condition. Cast iron with 1.25 per cent chromium shows no growth up to about 1100 degrees Fahr. This makes such an iron useful for many furnace parts such as grate bars, arch bars, door jambs, door frames, door liners and all parts where plain cast iron is generally used and subject to heat which normally causes cracking in a short time due chiefly to growth.

TO-MORROW

2 MILLION MORE FARMERS

● Tomorrow may bring a new day and a new deal for the American farmer.

For more than a decade his lot has been hard. His income dropped from 16 billions in 1919 to 11 billions in 1929 and 5½ billions in 1932.

Yet the soil as a haven of security was never more apparent.

Farm population, which reached its peak of 32,000,000 in 1910 and then fell to 30,000,000 by 1930, is now back at the 1910 peak.

This "back to the farm" movement is making tens of thousands of former city dwellers self-supporting.

With 2,000,000 more people on the farms, and with a rise in farm prices, more implements will be needed.

As general recovery progresses and farm incomes increase, agriculture will add to its efficiency with modern machinery.

A greater demand awaits the farm implement industry, both for replacement and for new uses.

The Interlake Iron Corporation has for many years met the requirements of implement makers for pig iron and foundry coke.

INTERLAKE IRON CORPORATION

PIG IRON - COKE

PLANTS—CHICAGO . DULUTH . TOLEDO . ERIE

PICKANDS, MATHER & COMPANY, *Sales Agents*

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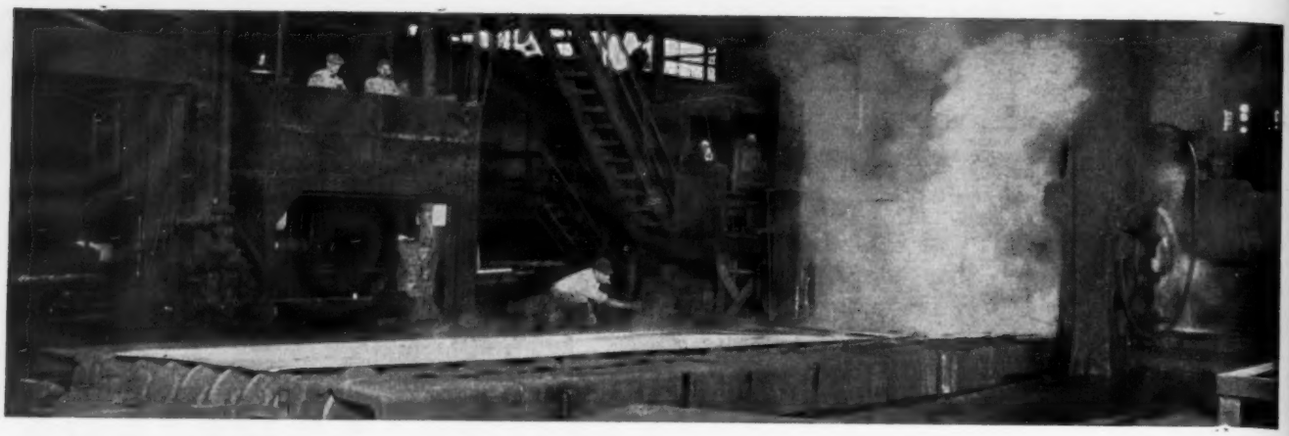


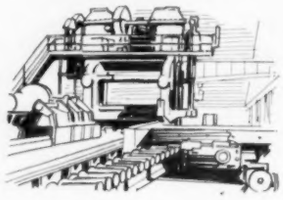
PROGRESS IN STEELMAKING

MANY hydraulic valves, which have developed leaks after prolonged service, are being returned to the maker for repairs instead of being replaced with a new unit as usually is the case in prosperous times. A reconditioning department recently was established by a valvemaker to keep certain members of his organization engaged pending receipt of new business but the valve repair work increased in volume to such an extent that the once-considered makeshift now is a permanent and self-sustaining division of the plant. Officials of the company have gained considerable knowledge from a study of the worn parts and as a result are replacing the spent members with metallic parts which differ in composition from the initial parts and which are affording a maintenance charge 20 per cent lower than was possible with the original valve.

• • •

Two hot mills embodying 3-high rolls and equipped with automatic tilting tables on the roller's and catcher's side are being built in this country for rolling sheets. This setup permits the catcher to feed the stock through instead of over the rolls to the roller's side of the mill, thus increasing output 100 per cent.

DEVELOPMENT of a new process for gouging billets and slabs with oxyacetylene gas at a steel plant in the East is claimed to afford a savings of $1.75 a ton, compared to the method of chipping out the surface defects with air chisels. The success of the process depends largely on the use of a special tip which will cut out the defective metal, leaving a wide shallow groove with edges merging into the original surface on each side.



INSTALLATION of an automatic lubricating system on a 40-inch blooming mill in the Pittsburgh district has effected an extension of the bearing life of nearly 80 0per cent. The lubricant is delivered to the thrust surface by a single lead and to the radial surface by two leads. Locating the latter 180 degrees apart permits of sufficient lubricant in the pressure area regardless of whether the rolls are in forward or reverse rotation.

• • •

Improvement in the structure at the center of billets and bars is claimed for a new method of casting steel. The process, which involves winged ingots, is being used by a steelmaker in the Pittsburgh district in the manufacture of several types of high-grade steels.

• • •

Introducing all heat above the dross line of a galvanizing pot located in a western plant has obviated dross circulation in the bath of spelter, thus affording tight coated stock. The kettle is heated along both sides for its entire length by burners of the impact type which fire into a bed of refractory material. Along each side also are located holding and pilot burners which receive their supply of gas through a separate high-pressure line. Firing equipment is located beneath the working floor in a pit which extends the full length of the galvanizing pot. At the end of the day turn the galvanizing pot is covered and the bath automatically is maintained at the desired temperature by the holding burners. At the start of the turn the following morning, the covers are removed and the impact burners are made to supply the input heat. The automatic control reduces fuel consumption, minimizes the percentage of dross loss and affords maximum pot life.

• • •

Mercury lamps installed over the assorting tables in the tin house give a light free from glare, thus rendering the surface of the tin plate suitable for a closer inspection than is possible with other types of lighting.

• • •

Automatic preset screwdown control, which affords a closer gage setting and obviates the necessity for a hand-operated screwdown, now is available for hot sheet mills. By means of this equipment each reduction in gage involved in the complete rolling schedule is preset. Compensation for temperature differences in the packs or roll expansion may be made by the operator.

HIGH aluminous insulating brick now is available as a lining for normalizing and heat treating furnaces which operate below 2600 degrees Fahr. and with atmospheres free from fluxing agents.

BETTER QUALITY »» ««

....Developed through Field Service.....

UNION Drawn maintains a staff of trained metallurgists and engineers to serve manufacturers right in their own plants. Questions concerning steel analyses, physical properties, heat treatments and machining operations are studied in relation to better quality and greater economy. With complete knowledge of all details we can furnish the steel that best fills the requirements.

This service has had far reaching influences upon our operations beyond improvements developed for individual users. Constant contact with actual conditions keeps us geared to the most up-to-date needs. Invariably, each case analyzed has similarities with many others. Directly or indirectly all of our customers are benefited.

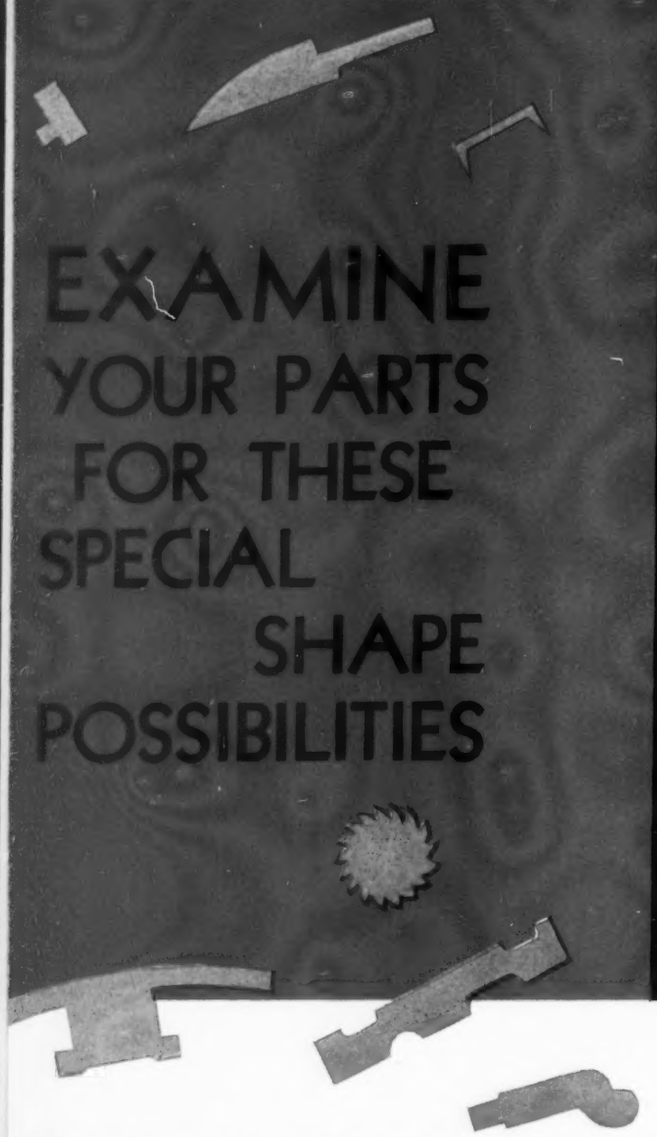
VIGILANT LABORATORY CONTROL

UNION DRAWN STEEL CO.

MASSILLON, OHIO

. COLD DRAWING PROVIDES
. MAXIMUM MACHINABILITY

EXAMINE YOUR PARTS FOR THESE SPECIAL SHAPE POSSIBILITIES



GREATER TENSILE STRENGTH AND ELASTIC LIMIT THAN FORGINGS
TOUGHER AND MORE DUCTILE THAN CASTINGS
NO MACHINING AS WITH HOT ROLLED BARS
DIMENSIONS ACCURATE TO CLOSE TOLERANCE
ANY ANALYSIS MAY BE SPECIFIED
NO METAL WASTED
COLD DRAWING PRODUCES BETTER APPEARANCE
BAR SHAPED LIKE FINISHED PART

KEEP a sharp lookout for opportunities to adopt the profitable advantages of Cold Drawn Special Shapes.

Some parts immediately suggest the use of these special bars, the improvement in method being readily apparent. Usually, the advantages are discovered only after delving into facts and figures and many difficult applications have been ingeniously developed.

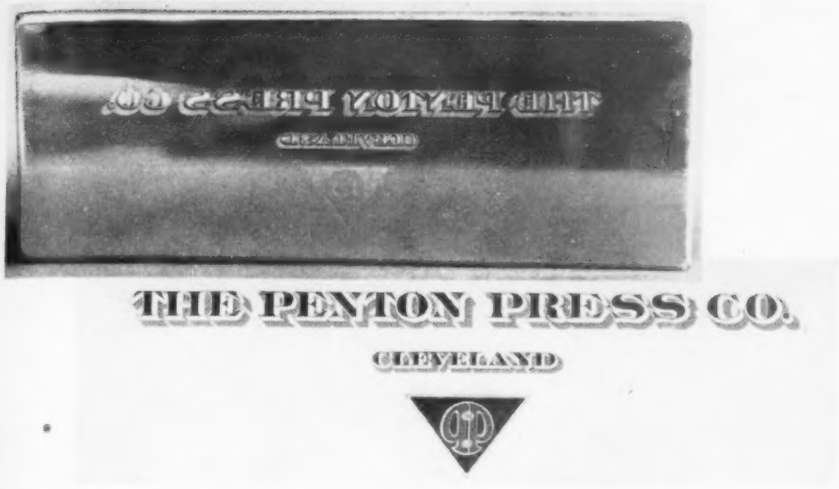
To eliminate machining operations—cut production costs—is an important aim but quality advantages with better material are equally desirable. The illustration points out some of the improved properties that are obtained.

Manufacturers cannot afford to overlook any Special Shape possibility. We have worked out scores of applications which originally seemed impractical to buyers from the standpoint of economy. It is therefore strongly urged that sample parts or blue prints be submitted for the study of our engineers.

By no means is it essential in all cases that orders be for large tonnage. Many shapes have been provided in small quantities without requiring special rolls.

UNION DRAWN STEEL CO. - - - MASSILLON, OHIO

· UNION COLD DRAWN STEELS · · · · · · ·



Photo, courtesy Peck Engraving Co., Cleveland

A plate of engraver's steel, 3 x 7¾ x ½ inches, weighing 3 pounds 11 ounces. The letters and other characters are cut in the surface. Printing from this plate is somewhat similar to a stamping operation, the incisions being filled with ink, and the press forcing the paper against the ink, giving the paper an embossed effect

LARGE USES OF STEEL IN SMALL WAYS

241st Article ◆ Engravers' Steel

THOUGH consumption has declined sharply, as a result of the general business depression, normally approximately 125 tons of engraving steel is used in this country each year, according to trade estimates. Of this amount, the federal government and the American Bank Note Co., New York, engraver of security paper, consume by far the largest quantity, with the former the largest single user.

With bond and stock issues relatively few and general commercial engraving at the lowest point in years, it is not surprising that current consumption has dropped appreciably. Greeting cards, in wide vogue three or four years ago, are one of the countless lines to have suffered. Yet sellers of engraving steel stand among the first to benefit, once business conditions turn definitely upward.

One of the largest commercial steel engravers in the Middle West notes that in four business depressions through which it has passed, orders for steel engraving fell off before there was an appreciable general business disturbance; and that on the rebound its business picked up before the improvement became generally noticeable.

Engraving steel falls into three classifications, in point of usage. The principal classification is known as transfer steel, used largely by the government. The second largest classification is commercial steel; and the third, picture steel, so called because of its application in picture etchings.

Engraving steel is a soft carbon material, with fine grain a prime requisite. While there are various formulas, the principal variation appears to be in the carbon content. Transfer steel is the softest, ranging from 0.25 to 0.35 per cent carbon; commercial steel 0.30 to 0.35; and picture steel 0.40 to 0.60, although the usual maximum is about 0.45 to 0.50 per cent.

Various Thicknesses Used

Transfer steel comes in plates, usually ¼-inch thick, ranging from 10 to 25 inches in width, and 14 to 40 inches in length. Commercial steel varies generally from 3/16 to ½-inch in thickness.

Distributors of engraving steel usually are prepared to grind, polish and cut to size the steel as it comes from producers. A considerable proportion of the engraving steel used in this country, comes from abroad, particularly from England and Sweden. Incidentally, it is interesting to note that engraving steel was an American invention of more than 100 years ago, high-carbon tool steel being decarbonized by long annealing in iron oxide.

When the engraver prepares to use his steel he burnishes it to obtain a perfectly smooth surface. The characters then are cut in the surface with an engraving tool, the workman peering through a magnifying glass. Fine lines are cut with a diamond point in a ruling machine. Frequently an acid-resisting varnish is painted on the surface of the steel and the engraver merely cuts through this resist, the steel being etched with acid.

Printing is done in a special press. Ink is rolled over the entire surface of the plate. The incisions in the steel retain the ink, while the surface is cleaned off by a wiping action from a section of a roll of paper. The sheet of paper to be printed then is fed into the press, and the steel plate is pressed against it so forcibly the paper retains the ink.

Bethlehem Shipping New Galvanized Wire

Shipments of a new kind of galvanized wire, using a recently-developed patented electric process, marketed under the trade name "Bethanized," were started last week from the Maryland plant of the Bethlehem Steel Co., Sparrows Point, Md.

This wire does not supplant hot dipped galvanized wire, but is manufactured for special purposes, such as telephone lines, where the wire is submitted to unusual bending and twisting, and where high resistance to corrosion is a factor.

One of the initial shipments was an order of 11,000 pounds for the Rock Creek Park zoo, Washington.

Introducing New Cobalt Steel for Magnets

The Edgar Allen Steel Co. Inc., 741 Washington street, New York, has placed on the market a new 35 per cent cobalt magnet steel for use in permanent magnets. It possesses improved electrical properties. It is produced by Edgar Allen & Co. Ltd., Sheffield, England, and is supplied hot rolled or cast to shape. Incidentally, this new magnet steel was used in the construction of the world's largest permanent magnet in the Cavendish laboratory, England.

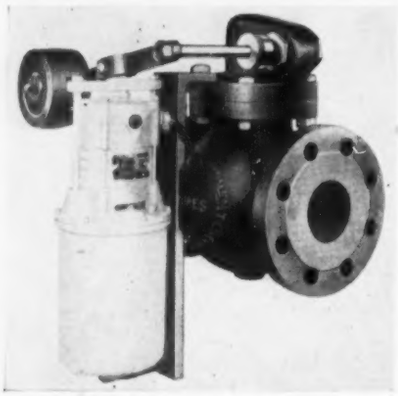
Louisville Bridge & Iron Co., Louisville, Ky., has been awarded steel work, except mechanical equipment, for the new brew house of the Frank Fehr Brewing Co., Louisville, Frank Fehr president. Production is set for June 1.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

New Control Valve Is Thrustor Operated

Northern Equipment Co., Erie, Pa., recently announced a new Copes thrustor-operated control valve, shown herewith, for centralized remote control of flows of gases or liquids under pressure. This new unit is operated by a General Electric thrustor, mounted at the side of the valve by a bracket firmly bolted to the valve bonnet. The thrustor is a self-contained power unit, consisting of a motor controlling an improved hydraulic cylinder. It applies a straight-line, constant-pressure thrust on the valve lever, to open or close the valve, depending on the service requirements.



Heavy viscous liquids can be handled by this Copes valve

The thrustor can be controlled by push button or time switch. External adjustment is provided to increase or decrease speed of the valve movement. The valve can operate at a rate of 40 times per minute without injury to any part. It has sufficient power to handle heavy viscous liquids.

◆

Electric Hammer Is Double Purpose Tool

Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, has designed a double purpose tool which can be used as a hammer or a drill. It will drill, chip and channel concrete, brick, wood etc., being particularly adaptable to plumbing and electrical work, installing machinery, office partitions, etc. One of the features is that the tool also will chip steel and drive light rivets. In hard limestone the unit drills a ¾-inch hole 1¾ inches deep in one minute using a standard taper shank drill with holder, it is asserted. This time can be cut in half, it is claimed, if the drill employed is made solid with straight shank which fits directly into the hammer, without an adaptor.

◆

Designs Two-Fluted Keyway End Mill

Weldon Tool Co., 1426 West Third street, Cleveland, recently designed a special form of end mill for the rapid production of keyways. Outstanding features include cutting edges at the ends as well as at the sides, and the absence of a center hole. The tool, therefore, can be fed downward like a drill as well as horizontally, thus entirely avoiding the usual need for preliminary drilling and for taking several successive cuts to gain the required keyway depth, it is claimed. It is made double ended, with flutes hollow ground and a double "back-off" on the cutting edges.

◆

Apparatus Tests Moisture Content of Materials

Alpha-Lux Co. Inc., 192 West Front street, New York, is marketing a new type of apparatus to determine the moisture content of molding sand, coal, coke, oxides, powdered fuel, abrasives, etc. The new unit is simple and quick and enables the moisture content of molding sand to be tested in from one to two minutes. Principal parts of the equipment consist of a scale, a measuring scoop, a shaper and an absorbent material which is used in the test.

◆

Builds Swaging Machine For Pointing Rods

Langelier Mfg. Co., Providence, R. I., recently completed a swaging machine for pointing copper and nickel silver rods preparatory to a drawing operation, to permit threading the stock through a die for gripping by the jaws. The three sets of dies furnished reduce ¾, 11/16 and ⅝-inch stock about 0.150-inch per pass for a length of 12 inches. Production averages about 400 ends per hour.

The unit is equipped with a pressure feed lubrication system. As a wide range of sizes are handled the cover used to retain the dies in position is made for quick removal, and a flywheel brake is furnished to stop the rotation of the spindle immediately and thereby keep to a minimum the time required for changing tools. Drive is from a 15 horsepower motor through a set of V-belts.

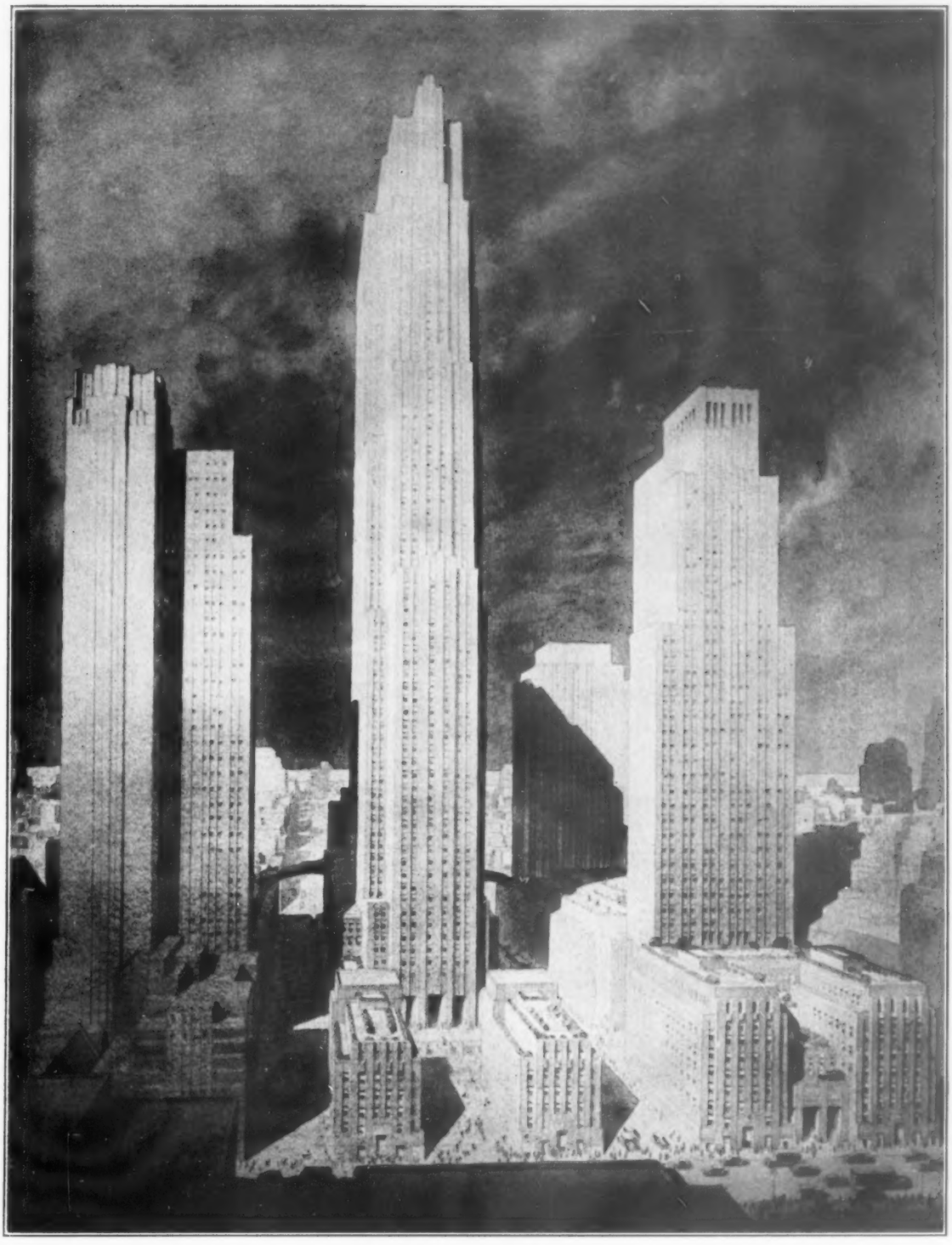
◆

Offers New Bench Lathe For Metal Cutting

South Bend Lathe Works, 426 East Madison street, South Bend, Ind., recently placed on the market a simplified metal cutting bench lathe of 9-inch swing. The unit, shown in the accompanying illustration, will handle any machining or grinding operation usually assigned to a lathe of this size, whether in the laboratory, machine shop or repair shop. It will cut all standard screw threads from 4 to 40 per inch; will handle straight and taper turning, boring and reaming; will do drilling, cutting-off, buffing, grinding and polishing; can be fitted with attachments for milling, keyway cutting and other special work.

South Bend bench lathe embodies many radical economies

Outstanding mechanical features of the lathe include six speed back-geared headstock; hollow spindle of alloy steel; felt wick lubricated bearings; extra long carriage bearings; carriage lock for facing; graduated compound rest with micrometer collars.



ROCKEFELLER CENTER

48th Street to 51st Street between 5th and 6th Avenues, New York

Structural Steel for the World's Largest Building Project

Fabricated by

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

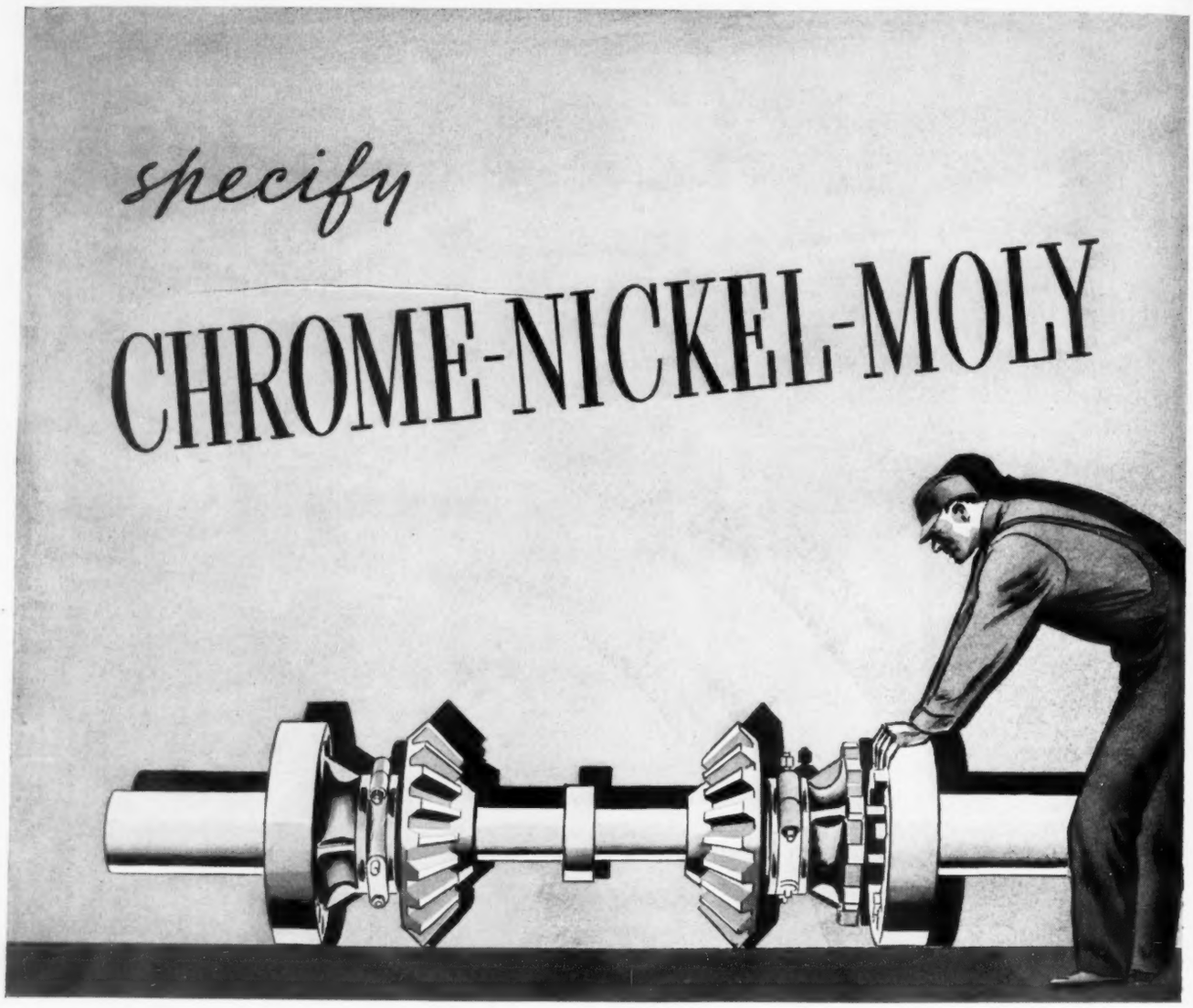
SUBSIDIARY OF UNITED STATES STEEL CORPORATION

Contracting Offices: Baltimore, Boston, Chicago, Cincinnati, Cleveland, Denver, Detroit, Duluth, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Salt Lake City.

Pacific Coast Distributors: COLUMBIA STEEL COMPANY, San Francisco, Los Angeles, Portland, Seattle.

Export Distributors: UNITED STATES STEEL PRODUCTS COMPANY, New York, N. Y.

TO PREVENT PART FAILURES WITHOUT CHANGING DESIGN



CHROME-NICKEL-MOLY is an outstanding steel for withstanding extreme torsional loads. It has unusual capacity for flowing torsional stresses until they are evenly distributed. Hence, failures are rare.

It is frequently specified where additional strength of a part is required without adding to size or weight, or where the expense of redesigning would be prohibitive.

Chrome-Nickel-Moly, despite its superior physical qualities, presents no unusual machining difficulties. In fact, it cuts as freely as the ordinary Chrome-Nickel steels of lower strength.

Complete information and counsel on the use of Chrome-Nickel-Moly may be had from our metallurgists.

Chrome-Nickel-Moly requires the most careful control of rolling temperatures. Ingot sizes must be adjusted to the size of the individual heat. Cooling and finishing temperatures must be rigidly controlled. In short, special facilities, special techniques, special skill are required. Many exacting manufacturers can testify to the dependable and uniform quality of Illinois Steel Company's Chrome-Nickel-Moly.

Illinois Steel Company
Subsidiary of United States Steel Corporation
208 S. La Salle Street, Chicago, Illinois

U·S STEEL

ILLINOIS *alloy* STEEL

ALWAYS DEPENDABLE

Consumer Requirements Revitalizing Markets

Steel Rate Lifted 4½ Points to 25 Per Cent Before the Start of Inflationary Measures—Further Gains Indicated—Prices Stronger

STEEL ingot production is scheduled to expand to 27 per cent this week, compared with 25 per cent last week and 20½ per cent two weeks ago—the sharpest rise of the depression, recouping all the ground lost since early February, 1932.

Gains were made during the week in all districts, except Detroit which held to 38 per cent. Cleveland moved up to 36 per cent; Pittsburgh to 21 per cent; Chicago to 23½; eastern Pennsylvania to 14; Youngstown to 22; Buffalo to 25; Birmingham to 20.

Because some mills are picking semifinished steel off their stockpiles, finishing mill activity has forged ahead to an even greater extent than the ingot rate implies. This bulge in operations is traceable to definite consumer requirements, placed prior to announcement of Washington's inflationary program.

Widespread indications of further improvement in iron and steel demand, followed by the general strengthening of commodity prices, released enthusiasm pent up during almost four years of depression, revealing the strong, underlying aspirations for quick recovery.

Scrap rose so sharply last week that dealers began to avoid orders. Adjustments in foreign exchanges tended to lessen foreign competition in pig iron, iron ore and ferroalloys. On practically every finished steel product, makers talked of impending price advances. And to find a volume of business comparable with that placed on their books during the week they went back to the spring months of 1932.

Larger transactions, and an apparent scarcity of scrap, again raised prices 50 cents to $1 in all districts. Heavy melting steel at Chicago sold at an advance of $1.50 to $1.80 a ton. Several important direct deals were made between railroads and steel mills, such as the sale of 30,000 tons by the New York Central to the Carnegie Steel Co., and the reported exchange of 100,000 tons by the Pennsylvania railroad for approximately 25,000 tons of rails.

A strongly rising trend in pig iron shipments is attributed in considerable measure to the higher prices of scrap for foundry mixtures. With a rush of new inquiries, Pittsburgh furnaces are withdrawing quotations. A Cleveland steelworks has lighted another blast furnace, for its own and merchant requirements.

Broader, miscellaneous demands, plus a moderate increase in automotive specifications, still constitute the main support of the finished steel markets. Structural shape awards for the week, 14,483 tons, show a substantial gain, aided by 6600 tons for the St. Louis federal building. The R. F. C. has indicated early approval of a loan for a New York tunnel requiring 150,000 tons.

Railroad purchasing still is in suspension. The Erie has placed 5000 tons of track fastenings. Seasonal buying of cast pipe by municipalities is far below normal. St. Louis has distributed 3400 tons of pipe.

Rising for the third consecutive month, this country's iron and steel exports in March reached 80,567 gross tons, largest in 20 months, compared with 63,936 in February. Imports, after declining three successive months, increased to 22,114 tons, from 19,748 in February.

Sentiment regarding finished steel prices is stronger, though makers have committed themselves to most consumers for second quarter. It is believed the first effect of a general inflationary trend will be to make present official prices more applicable in the spot market. Pittsburgh mills are preparing to advance strip $3 per ton, and to establish a delivered price basis at Detroit on hot strip.

STEEL'S finished steel composite this week is unchanged at $44.90; the iron and steel composite is up 4 cents to $28.18, due to the advance of $2 a ton in galvanized sheets; and the scrap composite is up 88 cents to $7.75.

Composite Market Averages

	April 22	April 15	One Month Ago March, 1933	Three Months Ago Jan., 1933	One Year Ago April, 1932	Ten Years Ago April, 1923
Iron and Steel Composite	$28.18	$28.14	$28.35	$28.68	$29.75	$47.01
Finished Steel Composite	44.90	44.90	45.60	46.13	47.62	66.88
Steelworks Scrap Composite	7.75	6.87	6.47	6.23	7.76	22.95

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	April 22, 1933	Mar. 1933	Jan. 1933	Apr. 1932
Pig Iron				
Bessemer, del. Pittsburgh	$16.26	15.76	15.76	16.76
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	14.19	13.50	13.50	15.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	16.26
No. 2 foundry, Chicago	15.50	15.50	15.50	16.00
*Southern No. 2, Birmingham	12.00	11.00	11.00	11.00
**No. 2X, Virginia furnace	17.75	17.75	17.75	18.00
**No. 2X, Eastern, del., Phila.	14.51	13.76	13.76	15.66
Malleable, valley	14.50	14.50	14.50	15.50
Malleable, Chicago	15.50	15.50	15.50	16.00
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	16.13
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	80.24

*1.75-2.25 silicon. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	1.75	1.75	1.75	2.25
Connellsville, foundry, ovens	2.25	2.25	2.50	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	27.00
Wire rods, Pittsburgh	35.00	35.00	36.20	37.00

	April 22, 1933	Mar. 1933	Jan. 1933	Apr. 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.91
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.70	1.75
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.50	1.60	1.60	1.60
Tank plates, Philadelphia	1.54½	1.59½	1.66	1.79½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.55	1.55	1.65	1.70
Sheets, No. 24, hot ann., Pitts.	2.00	2.00	2.05	2.20
Sheets, No. 24 galvan., Pitts.	2.70	2.60	2.70	2.85
Sheets, No. 10 blue anneal., Chi.	1.70	1.70	1.85	1.85
Sheets, No. 24 hot ann., Chicago	2.15	2.15	2.25	2.35
Sheets, No. 24 galvan., Chicago	2.85	2.75	2.85	3.00
Plain wire, Pittsburgh	2.10	2.10	2.15	2.20
Wire nails, Pittsburgh	1.85	1.85	1.90	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$10.50	8.75	8.35	10.20
Heavy melting steel, eastern Pa.	7.00	6.50	6.50	7.20
Heavy melting steel, Chicago	7.50	5.25	5.25	6.55
No. 1 wrought, eastern Pa.	7.50	6.75	6.50	7.95
No. 1 wrought, Chicago	5.00	5.00	5.00	5.85
Rails for rolling, Chicago	8.25	7.85	8.05	8.90

Sheets

Users Cover as Events Point to Higher Prices — Galvanized Rise Applied

SHEET METAL PRICES, PAGE 43

Pittsburgh—Advances in the base prices of sheets other than galvanized are possible in view of the way in which the new base price of 2.70c, Pittsburgh, a rise of $2, for galvanized sheets has held since its announcement last week. At all events, the intimation that prices are to be raised has driven many customers to cover. Galvanized was covered rather widely at 2.60c before the advance, so the new price has been applied only on spot business. Customers still seek unsuccessfully to cover beyond this quarter. Light cold-rolled sheets are firm at 2.30c base, Pittsburgh. The same may be said of black sheets at 2.00c, although no measure of strength appears shared by light plates, which for No. 10 gage hot-rolled are 1.50c to 1.60c.

Cleveland — Further substantial improvement in sheet orders, specifications and shipments is noted here. New tonnage for one important interest here for the week was the largest of any week since March, 1932. Another reports its bookings, chiefly sheets and strip, the largest since last May. Automotive specifications, mainly from General Motors, Chrysler and Ford, in the week were 10 per cent or more larger than in the preceding week. Sheet mills here continue at 50 per cent; in an adjacent district, at 40 to 50 per cent. Refrigerator, barrel, pail and miscellaneous requirements have improved. Automotive interests have issued some specifications for May, but the bulk of material is wanted promptly, with little speculative buying in evidence. Many consumers are protected at current prices for second quarter.

Chicago—Sheets continue the most active of steel products, operations averaging 35-40 per cent. While demand from the automotive industry chiefly is responsible, miscellaneous consumers also are better buyers. Application of a $2 advance on galvanized sheets to 2.80c, base, has yet to be tested, although the increase drove in much business at 2.70c.

Boston—Sheet prices are firmer on spot business, which is light, most of the larger buyers having covered at old prices late last month. Specifications against these contracts are fair. Several oil burner tank builders are less active, but one bought moderately against the expected rise.

New York — Although volume has shown little change, sentiment in the local sheet market is stronger. On such new business as is coming out, the new prices are being done.

Philadelphia—Local sheet market reflects a better tone, with much interest in the trend of autobody prices. Trading in this material has dominated business this month, with a substantial proportion going at old protections. Two radio manufacturers have been increasing buyers of hot sheets and strip, stepping up operations on small radio sets for automobiles. Allegheny Steel Co. has been awarded 700 tons of license tag stock by Pennsylvania. A test of the 2.75c, Pittsburgh, price on long ternes is expected shortly on an opening at the Frankford arsenal.

Buffalo—A spurt in sheet production has put production up to 25-30 per cent compared with a March average of 15-20.

Cincinnati—Production of district sheet mills was nearly 35 per cent, with improvement in demand noted earlier this month holding. Heavier automotive specifications and renewed activity in refrigerator and other manufacturing lines were reported.

St. Louis—The only change in sheets is an advance in galvanized from 2.94c to 3.04c, delivered. Demand is holding up fairly well, but is somewhat less diversified. Purchasing centers chiefly in blue annealed, hot rolled and tin mill black stock.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.50c to 1.60c
Chi. dist. mills	1.50c
Chicago, del.	1.55c
New York, del.	1.75c
Birm., base	1.55c
Philadelphia, del.	1.71c

HOT ROLLED ANN. No. 10

Pittsburgh, base	1.55c
Chi. dist. mills	1.65c
Chicago, del	1.70c
Phila., del.	1.86c to 1.96c
New York, del.	1.90c to 2.00c
St. Louis, del.	1.89c
Birm., base	1.70c
San Fran., c.i.f.	2.32½c

HOT ROLLED ANNEALED
No. 24

Pittsburgh, base	2.00c
Chi. dist. mills	2.10c
Chicago, del.	2.15c
New York, del.	2.35c
Phila., del.	2.31c
Birmingham, base	2.15c to 2.25c
St. Louis, del.	2.34c
San Fran., c.i.f.	2.85c
Detroit, del.	2.18½c

GALVANIZED No. 24

*Pittsburgh, base	2.60c to 2.70c
*Chi. dist. mills	2.80c
*Chicago, del.	2.85c
Philadelphia, del.	3.01c
*New York, del.	3.05c
Birm., base	2.75c
*St. Louis, del.	3.04c
San Fran., c.i.f.	3.50c

TIN MILL BLACK No. 28

Pittsburgh, base	2.30c
Gary, base	2.40c
St. Louis, del.	2.64c

HEAVY COLD ROLLED
No. 10

Pittsburgh, base	1.90c
Chi. dist. mills	2.00c
Chicago, del.	2.05c
Philadelphia, del.	2.21c
New York, del.	2.25c

COLD ROLLED No. 20

Pittsburgh, base	2.30c
Do, autob. qual.	2.55c
Do, furn. qual.	2.90c
Chi. dist. mills	2.40c
Chicago, del.	2.50c
Philadelphia, del.	2.61c
New York, del.	2.65c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh

Tin plate, coke base, contract	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.75c

Gary base, 10 cents higher.

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
New York, del.	1.60c to 1.70c
Phila., del.	1.49½ to 1.59½
Boston, del.	1.82c to 2.02c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Birmingham, base	1.75c
Coatesville, base	1.40c to 1.50c
Pacific Coast, c.i.f.	2.00c
St. Louis, del.	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawan., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.95c
Boston, del.	2.02c
Pitts., cold finish	1.70c
Pitts., forg. qual.	1.75c and 1.85c
San Fran., c.i.f.	2.10c

RAIL STEEL

Pitts., Buff., St. Louis	1.30c
Chicago, base	1.50c
Eastern mills	1.30c

IRON

Chicago, base	1.60c to 1.65c
New York, del.	1.85c to 1.90c
Philadelphia, del.	1.81c to 1.86c
Pitts., refined	2.70c to 4.20c

REINFORCING

Billet, mill l'gths. Chi., Pitts., Buff.	1.40c
Do Cleveland	1.45c
Do Detroit	1.60c
Chicago, rail steel	1.30c
Phila., cut lengths	1.86c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher with 10% discount off extras; joint carloads 10 cents higher with no discount from extras; pool carloads 20 cents up; less carloads 30 cents up.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.85
Cement coated nails	1.85
Galvanized nails	3.35

(Per pound)

Polished staples	2.55c
Galvanized fence staples	2.80c
Barbed wire, gal.	2.35c
Annealed fence wire	2.25c
Galvanized wire	2.60c
Woven wire fencing (base column, c.l.)	$50.00

(To Manufacturing Trade)

Plain wire, 6-9 ga.	2.10c
Spring wire	3.10c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Cold-Finished Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.70c
20,000 to 59,999 lbs.	1.65c
60,000 to 99,999 lbs.	1.60c
100,000 lbs. and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Shafting

Cumberland, Md., base

1⅛-inch	3.00c
1⅞ to 1½-inch	2.50c
1⅞ to 1⅞-inch	2.20c
2⅛ to 6-inch	2.05c

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20

4100 .15 to .25 Mo.	0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	0.20
6100 bars	1.20
6100 spring	0.95
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 (flats)	0.25
9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16-in. wide, Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Phila.	1.76c
Do., del. N. Y.	1.80c
Cooperage hoop, Pittsburgh	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-rolled strip, Pitts., Cleve.	1.80c to 2.00c
Worcester, 3 tons or over	2.10c

Rails, Track Material

Stand. rails, mill	$40.00
Relaying rails, Pitts., 20-45 lbs.	$20.00 to 22.00
50 to 75	$16.00 to 18.00
80 to 100	$20.00 to 21.00
Light rails, 25-45, mills	$30.00
Light rails, Chi.	$32.00
Angle bars, mills	2.55c
Spikes, R. R. mills	2.15c
Spikes, boat, b'ge, Pitts.	2.65c
Track bolts, Chi.	3.50c
Do., stand., job.	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chi.	$35.00

Rivets, Wrought Washers

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chi.	2.35c
7/16-in. & smaller, Pitts., Chi., Cleve.	70, 10 and 10 off
Washers, c.l., Pitts. dist.	6.50 to 6.75 off
Do., Chi. dist.	7.25 to 7.00 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots, Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	75 off
Rolled thread ½ x 6 and smaller	75 off
Eagle list	75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	75 off
Tire bolts	60 and 10 off
Stove bolts, 75, 25 and 10 off in pkgs.; 86 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller	75 off.

NUTS

Semifinished	75 off

HEXAGON CAP SCREWS

Milled	80-10 off
Upset 1-in. diam., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10-10 off
Headless set screws	80 off
Upset, larger than 1-in.	80 off

Cut Nails, Piling

Cut nails, c.l., Pitts.	$2.50
Do., less carloads, 5 kegs or over	$2.90

Steel piling, Pitts. 1.90c to 1.95c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

All discounts are net.

BUTT WELD
Steel

In.	Blk.	Gal.
¼ and ⅜	60½	42
½	65½	54
¾	69	59
1—3	71	62

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD
Steel

2	66	57
2½ to 6	69½	60½
7 and 8	68	58
9 and 10	67	57
11 and 12	66	56

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

(Please turn to next page)

LINE PIPE

Steel

⅛-inch, butt weld	54
¼—⅜, butt weld	59½
½, butt weld	64½
¾, butt weld	68
1—3, butt weld	70
2-inch, lap weld	65
2½—6, lap weld	68½
7—8, lap weld	67
9—10, lap weld	66
11—12, lap weld	65

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra. 2-inch line discount unchanged from list prior to April 15, 1933.

BOILER TUBES

C. L. Discounts, f.o.b., Pitts.

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts same as for hot rolled, below. Charcoal Iron—Under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

Cold Drawn

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

Hot Rolled

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs. 40%
15,000 ft. or 22,500 lbs.....70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$32.00-33.00
4-in. Birm.	35.00-36.00
4-in. Chicago	43.40-44.40
6 to 24-in. Chicago	40.40-41.40
6-in. & over, N. Y.	32.00-34.50
4-in. New York	34.50-36.50

Class A pipe $3 over Class B.
Stand. fitgs., Birm. base...$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932. Asterisk denotes price change this week

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago, furnace	$15.50
Pitts., dist. fur.	15.00
Pittsburgh, del.	15.63-16.13
Valley furnace	14.50
Cleve. fur., local del.	15.00
Philadelphia del.	14.26
Virginia furnace	17.25
*Granite City, Ill.	15.50
Buff., fur., local del.	16.00
Buff., all-rail, Bost.	18.91-19.91
Do, Brooklyn	18.90
Do, Newark	17.28
*Ala., Birmingham	12.00
Ala., del. Chicago	16.01
*Ala., del. St. Louis	15.85
*Ala., del. Cincinnati	15.82
*Ala., Phila., dock del.	16.00-16.25
*Ala., Balt., dock del.	16.00
*Ala., N. Y. dock	16.50
*Ala., Bost. dock del.	16.75-17.75
Tenn., Bir. base	13.00
*Tenn., del. Cinci.	15.82
Montreal, del.	23.00-23.50
Toronto, del.	22.10

FOUNDRY, No. 2X

Buff., fur., local del.	16.50
Buff., all-rail, Brook.	19.40
Do, Newark	17.78
Buff., all-rail, Bost.	19.91-20.91
Virginia furnace	17.75
Eastern, del. Phila.	14.51

FOUNDRY, No. 1X

Buff. fur., loc. del.	17.50
Eastern, del. Phila.	14.76

MALLEABLE

Valley furnace	14.50
Cleve. fur., loc. del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, del.	15.63-16.13
Chicago, furnace	15.50
Buff., fur., loc. del.	16.50
Eastern Pa., del.	15.13-18.91
*Granite City fur.	16.00
Montreal, del.	24.00
Toronto, delivered	22.60

BASIC

Pitts., dist. fur.	14.00
Pittsburgh, del.	14.63-15.13
Eastern Pa., del.	14.00-14.25
Buff. fur., loc. del.	15.50-16.00
Montreal, del.	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	15.00
Pittsburgh fur.	15.50
Pittsburgh, del.	16.13-16.63

LOW PHOS.

*Valley, fur., stand.	24.00
Phila., standard	22.76-25.79
Copper bear., E. Pa. furnace	20.50-21.50

GRAY FORGE

Valley furnace	14.50
Pitts. dist. fur.	15.00
Pittsburgh, del.	15.63-16.13

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., fur. 6%—$18.00; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., 10%—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.80
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
No. Afr. low phos.	7.00
Swedish basic, 65%	7.50- 8.00
Swedish low phos.	8.00
Spanish, No. Afr. basic, 50 to 60%	7.00
Tungsten, spot, sh. ton unit, duty pd.	$9.65- 9.90
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton c.i.f.	$15.50-16.50

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	nominal
So. African, 52%....	18 to 19 cts.
So. Afr., 49-51%	nominal
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Ala.	$35.00
Missour	35.00

Second Quality

Pa., O., Ill., Ky., Md.	30.00
Missouri	30.00
Georgia, Alabama	30.00

MALLEABLE BUNG BRICK

All bases	40.00

SILICA BRICK

Pennsylvania	$35.00
Joliet, E. Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton, 9 x 4½ x 2½

Burned	$61.50
Unburned	52.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$42.50

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	38.00
Domes, Chewelah, Wash., base	20.90

Fluorspar

85 to 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$10.50
Washed gravel, import duty paid tide, gross ton	16.50

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

*Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.	1.50c-1.60c

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$1.75
Connellsville fdry.	2.25- 2.50
Connell. prem. fdry.	4.00
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21- 8.81
Chi. ov., outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, ovens Connell. basis	4.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd. (con.)	‡$68.00
del. Pitts. (con.)	‡73.24
Spiegeleisen, 19-20%, dom. fur., spot†	24.00
Ferrosilicon, 50%, freight all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.	0.94- 1.00
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton c. l., 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity. ‡Spot, $7 less.

ARMCO on the Air: WLW, 700 Kc—Friday Nights—8—8:30 Eastern Standard Time

"It's the variables that cause trouble in porcelain-enameling sheets . . . ."

"REDUCE the variables in porcelain-enameling practice," this experienced enameling plant superintendent reflected, "and you'll get consistently good results . . . few rejections, uninterrupted operations, bigger profits, and faultless, saleable pieces.

"How do I do it? That's easy to answer. I buy the most uniform, even-bonding base metal produced today—Armco Ingot Iron. I hardly ever have trouble; and when I do there is an Armco Man on the job ready to help me correct it in short order."

That is what hundreds of alert enameling plant men think of Armco Ingot Iron—and Armco service. No wonder it is called "the world's standard enameling iron." No wonder it goes into more finely-finished porcelain enameled products than any other metal. Not only does it *measure up* to production needs, but it gives the retailer the unquestioned sales-power of an accepted name—"Armco."

You can purchase Armco enameling iron in the one right grade for your purpose—regular, or tight-bonding *Crystal Etched*, for flat work, deep drawing or extra deep drawing. If these profit-advantages sound good to you just tell our nearest office what you want to accomplish with sheet metal.

THE AMERICAN ROLLING MILL COMPANY

Executive Offices: Middletown, Ohio

DISTRICT OFFICES: Boston . Chicago
Cleveland . Detroit . Middletown . New York
Philadelphia . Pittsburgh . St. Louis
San Francisco

ARMCO

ARMCO ENAMELING IRON

Produces Profits

"the world's standard enameling iron"

Bars

Buying Volume Shows Increase —Automotive Users Take Most —Future Covering Light

BAR PRICES, PAGE 43

Pittsburgh — Miscellaneous bar buying has increased. Several inquiries from automobile and parts manufacturers are active and considerable improvement is noted in specifications from Detroit. One bar mill here has been receiving better orders for four consecutive weeks and April will be its best month in tonnage since last fall. The present market of 1.60c base, Pittsburgh, seems likely to be advanced.

Cleveland—Demand for commercial steel bars is decidedly better, some makers reporting gains of as much as 50 per cent in bookings the past week over the preceding week. Automotive requirements again are taking 65 per cent of the output here. There have been more sales of truck rim stock and material for truck springs. Some buying also is noted for agricultural equipment, though this is far below normal for the season. Road machinery builders also figure in current orders. Little speculative buying is reported, despite anticipation of commodity price inflation. Bars are steady at 1.65c, base, Cleveland.

Chicago—Further gains are apparent in steel bar demand. While automotive needs predominate, orders from miscellaneous users are expanding. Speculative buying has yet to make its appearance, orders being largely for immediate shipment. Automotive business is somewhat better than had been expected and with improvement elsewhere sales and specifications are at a peak for the year. Demand from farm implement manufacturers reflect quiet and unchanged operations in that industry.

Boston—Commercial steel bars are firm at 1.60c, Pittsburgh. Demand is light.

Philadelphia — Bar specifications have increased, although little is coming from the railroads, normally the largest single consumers in this district. Four destroyers may require approximately 200 tons of bars. Prices are firm at 1.60c, Pittsburgh, or 1.91c, Philadelphia. Common iron bars are unchanged at 1.50c, Pittsburgh, or 1.81c, Philadelphia.

Tin Plate Rate Up to 50

Tin Plate Prices, Page 43

Pittsburgh—At 50 per cent, the average of tin mill operations was up five points last week but this rate is supported largely by orders for rush shipment and is irregular at many individual mills. For example, many producers are not able to tell until Saturday at noon what their operating rate for the coming week will be due to demands for immediate shipment made by the canmakers and the fact that the latter's inventories are still held down. Tin plate prices appear fairly steady at $4.25 per base box and there is little likelihood of an advance in common with proposed advances in sheets. Tin mill black is 2.30c, Pittsburgh, and long ternes 2.75c.

Cold-Finished Sales in April Best for Months

Cold Finished Prices, Page 43

Pittsburgh—April bids fair to be the best month in the past six or seven from the standpoint of cold-finished bar orders and shipments, largely attributable to automotive consumption. The outlook for May is even more promising. In general, the base price of 1.70c, Pittsburgh, is the market with usual differentials for other basing points and quantities being observed.

Plates

Oil Tanks and Ships Furnish Tonnage—Effort to Steady Prices—Sales Are Small

PLATE PRICES, PAGE 43

Pittsburgh — Although plates are easy at 1.50c, to 1.60c, Pittsburgh, an advance firming the market to 1.60c appears in prospect. Much of the weakness originates from a highly unsettled eastern situation, with the Coatesville, Pa., base $2 to $4 under the nominal 1.60c, Pittsburgh, base. Richfield Oil Corp. is inquiring for 600 tons of plates for gasoline tanks to be built at Providence, R. I., Rochester and Syracuse, N. Y. Formal award has been made to Dravo Contracting Co. on 130 tons of plates for an oil barge for the Vicksburg, Miss., engineers and the company expects to begin laying bottom plates within the next few days. The barge will be 120 x 30 x 7 feet.

Cleveland—With further indications of general commodity price inflation, platemakers are hopeful of being able soon to apply 1.60c, base, Pittsburgh, firmly to even the largest orders for plates, this price now being usual only on small and moderate size lots, constituting most current business. Miscellaneous requirements have improved. Boilermakers appear more active. A few additional orders have been placed for brewery tanks. The Cleveland plate mill has resumed operations on an accumulation of specifications.

Chicago—Only small plate tonnages are being booked, improvement being retained by continued quiet in railroad equipment and repairs and in tank work. Orders for oil and gasoline storage tanks are light, and water tank construction for municipalities is slow. Pending work for breweries involves only small tonnages.

Boston—Plate users are buying only to cover work on contract and are not anticipating needs. Some improvement is shown in the volume of small lots. Prices are weak and somewhat mixed, with 1.40c, Coatesville, Pa., still evident from some mills, although 1.50c and 1.60c applies to most sales.

New York — Possibly 3500 tons of steel plates may be awarded soon for a proposed refinery at Houston, Tex., for the Pan American Petroleum & Transport Co., which also may shortly place tonnage for refinery expansion at Baltimore. Jacob Ruppert, brewer, New York, is reported to have placed 88 glass-lined steel tanks with the Pfaudler Co., Rochester, N. Y. Interest is being revived in a 60-inch steel water line at Rochester, requiring 8000 tons.

Philadelphia—While plate demand continues spotty, volume is better. One eastern mill experienced several exceptionally good days. Pusey & Jones Co., Wilmington, Del., has closed on 475 tons of plain plates, 100 tons of checkered plates, and 300 tons of shapes with eastern mills. Specifications for four destroyers may be issued shortly, it is reported. These destroyers would require 2000 tons of plates, 900 tons of shapes and 2000 tons of bars. Lancaster Iron Works is low on 125 tons of dredge

pipe for the local United States engineer with a bid of $6075. Prices continue soft at 1.40c to 1.50c, Coatesville, Pa.

Contracts Placed

575 tons, hull and checker plates, Pusey & Jones Co., Wilmington, Del.; to eastern Pennsylvania mills.

130 tons, oil barge for Vicksburg, Miss., engineers, 120 x 30 x 7 feet; to Dravo Contracting Co., Pittsburgh. Bottom plates to be laid this week at the Neville Island yards of the Dravo company.

100 tons of overhead tank, Illmo, Mo., water system, to Chicago Bridge & Iron Works, Chicago. Previously reported as unstated tonnage.

Contracts Pending

2000 tons, four destroyers; reported contemplated.

600 tons, gasoline tanks at Providence, R. I., Rochester and Syracuse, N. Y., for Richfield Oil Corp.

125 tons, dredge pipe, United States engineer, Philadelphia; Lancaster Iron Works, Lancaster, Pa., low at $6075.

Unstated tonnage, tank and tower, Veterans' hospital, Roanoke, Va.; Pittsburgh-Des Moines Steel Co., Pittsburgh, low.

Strip

Rise of $3 Per Ton Is Expected This Week

Strip Prices, Page 43

Pittsburgh—Effective at a date to be announced some time this week, hot and cold-rolled strip will be advanced on a Pittsburgh base, probably $3 a ton. The extent of the increase has not been determined. Hot-rolled strip is being bought more heavily and the spot market is firmer. Strip steel tonnage in the market during April appears to be more than twice that in March. Cold-rolled strip is more active with 1.80c to 2.00c, base, continuing until the announcement of the expected advance. Generally hot rolled is 1.45c.

Cleveland—Orders are more plentiful, chiefly from the automotive industry, with General Motors, Chrysler and Ford specifications predominating. Mill operations here and in nearby districts have improved, due largely to automotive specifications. Material is wanted promptly. Fairly good orders also continue to be received for the manufacture of beer cases. Cold-rolled strip holds at 1.80c to 2.00c, base, Cleveland; and hot-rolled 1.45c, base, Pittsburgh.

Chicago—Strip demand shows further small gains and activity is at its best rate so far this year. Improvement in automotive requirements has been accompanied by moderate gains in orders from other users and mill operations average 15 to 20 per cent. The trend in prices is toward firmness with hot strip continuing 1.55c, Chicago. Cold-rolled strip generally is 1.80c to 2.00c.

Boston—Cold-rolled strip is firm at 2.10c, Worcester, with irregular improvement in demand. Consumers are buying close to immediate requirements and the total of small orders shows some gain.

Philadelphia—Improved buying by radio manufacturers features the strip market here. Prices are unchanged with hot-rolled at 1.45c, Pittsburgh, and cold-rolled at 1.90c.

Details of the new plan for selling hot-rolled strip in the Detroit district will be found on page 14.

Wire

Gan in Demand Is Continued; Most Orders Small

Wire Prices, Page 43

Pittsburgh — The present wire and nail schedule is quotably unchanged with weakness in some quarters still prevailing. In general $1.85 per keg on nails is the market and 2.10c for plain wire. Users of wire products, especially jobbers, have been improving their specifications now for four consecutive weeks.

Cleveland—Orders for wire, wire specialties and nails have increased substantially, the number booked in the past week being larger than for any similar period in nearly 12 months. Individual orders, however, continue small or moderate. Further improvement in the banking situation in this district, it is said, would release considerably more business. Plain wire is firm at 2.10c, and standard wire nails $1.85.

Chicago—Consistent improvement in wire sales and shipments gives the market its best activity for the year to date.

Worcester, Mass.—Demand for wire is improving gradually with several specialty lines substantially better. Textile machinery specials for repairs exceed the volume last year much of which commands premium prices. A large part of this originates outside New England. Box-makers are taking more nails, with the price firm at $1.85, Pittsburgh.

Philadelphia — Demand for wire products continues slow with mill prices steady. An advance around the middle of this quarter is being discussed in some quarters. Jobbers' prices on wire nails are unsettled.

Railroads

Rail Mills Start Rolling; Buying Is at Light Rate

Track Material Prices, Page 43

Rail rolling has been started by Edgar Thomson mill of the Carnegie Steel Co. at Braddock, Pa., on 110-pound and 130-pound sections for the Erie, and some rails for the Steel Corp.'s subsidiary road. This is expected to require about 10 days. Other mills are working on or preparing to roll Erie rails. It is stated the New York Central will take no immediate action on the 9000 tons of rails recently authorized. Orders for these may be spread over several months. Report persists, without verification, that the Pennsylvania has traded scrap for about 25,000 tons of new steel rails, and that the New York Central and Baltimore & Ohio have a similar plan.

The Erie has distributed about 5000 tons of tie plates, spikes, track bolts and other track fastenings to accompany its recent purchase of 24,549 tons of rails. Mills at Chicago have an accumulation of specifications for track fastenings against which production is proceeding on a limited scale. The Missouri Pacific inquiry for 7000 tons of tie plates still is pending. Baltimore & Ohio is remodeling 45 box cars at a cost of about $12,000 to move cement by rail from West Virginia and Pittsburgh district plants to the site of a new dam on the Allegheny river.

Light rails are quiet, only occasional small orders being received. Buying for repair work is in small lots and infrequent. Prices of railroad supplies are unchanged.

Car Orders Placed

American Refrigerator Transit, repairs to 1300 refrigerator cars, to own shops at St. Louis and Kansas City, Mo. Cast steel side frames, steel wheels, truck springs being purchased.

Car Orders Pending

Central Supply Co., Philadelphia, repairs to 100 hopper cars and 50 gondola cars, pending; previously reported as involving new equipment.

Navy, five steel flats, 30-ton capacity, and three steel box cars, for Hawaii; Koppel Industrial Car & Equipment Co., Koppel, Pa., low.

Locomotives Pending

Navy, two switching locomotives and spares, Lallaulei and West Loch, T. H.; H. K. Porter, Pittsburgh, low.

Structural Shapes

Awards Increase, With 6600 Tons Placed for St. Louis Federal Building—R. F. C. Indicates Approval of Loan For 150,000-Ton New York Hudson River Tunnel

STRUCTURAL SHAPE PRICES, PAGE 43

New York—Early action is expected to be taken on the mid-town vehicular tunnel under the Hudson river, from Thirty-eighth street, Manhattan, to Weehawken, N. J., which will require approximately 150,000 tons of shapes. Approval of a loan of $75,000,000 by the R. F. C. to the Port of New York Authority is indicated, and announcement is expected shortly. Several hundred tons are active for state prison work, but the few large federal projects on which bids were taken recently still are in abeyance. Plain material is steady at 1.60c, base, Pittsburgh.

Pittsburgh—Fabricating shops still lack new projects to figure. Bids are being taken on a grade crossing elimination at Salem, N. Y., for the Delaware & Hudson railroad, requiring 285 tons. Several local bridge repair jobs are noted. Kaufmann Department Stores Inc., Pittsburgh, will build a large produce terminal here. For a dam at Fountain City, Wis., Carnegie Steel Co. will supply 2800 tons of 29½-pound piling. Plain structural material is 1.60c, concessions being limited to the larger tonnages.

Cleveland—The market for small lots of structural shapes appears more active, some of the smaller fabricating shops reporting better schedules. However, public and private work taking 100 or more tons of structural shapes are lacking. Plain material is steady at 1.60c, base, Pittsburgh.

Chicago—Structural activity is at a low ebb. Awards and new inquiries are the smallest of the year. Some state work is expected to be deferred pending action with reference to the national construction program.

Philadelphia—Structural shape demand is light, and fabricated material prices are easy, as low as $40 a ton, erected, being quoted on a job of less than 100 tons. Substantial inquiry for steel piling may develop with the enactment of pending legislation in New Jersey for protecting the coast line.

Boston—Fabricating shops here have only small lots on which to work. Massachusetts has defeated an attempt to divert gasoline tax funds, but the state highway bridge building program has not yet been decided. Widespread repairs to seawalls on the New England coast, damaged by recent storms, will ultimately require substantial lots of piling and reinforcing steel. Plain material is nominal at 1.60c, base, Pittsburgh.

Contracts Placed

6600 tons, federal building, St. Louis, to Mississippi Valley Structural Steel Co., St. Louis.

2800 tons, permanent and temporary 29½-pound steel sheet piling, dam, Mississippi river, Fountain City, Wis., to Carnegie Steel Co., Pittsburgh; through E. H. Gillen, contractor.

2100 tons, hospital, University of Maryland, Baltimore, to unstated interest; Consolidated Engineering Co., Baltimore, general contractor.

800 tons, two spans and repairs to Louisville & Nashville railroad bridges in Indiana, divided between Ingalls Iron Works Co., Verona, Pa., and Mt. Vernon Bridge Co., Mt. Vernon, O.

450 tons, state highway bridge, Stanbury, Mo., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

350 tons, Santa Fe railroad bridge, Wichita, Kans., to Kansas City Structural Steel Co., Kansas City, Mo.

300 tons, ship work, Pusey & Jones Co., Wilmington, Del., to an eastern Pennsylvania mill.

270 tons, postoffice, Bloomfield, N. J., to Lehigh Structural Steel Co., Allentown, Pa.

205 tons, building, Atlantic & Pacific Tea Co., Trenton, N. J., to N. A. K. Bugbee, that city.

150 tons, highway bridge, Pemiscot county, Missouri, to Stupp Bros. Bridge & Iron Co., St. Louis.

123 tons, bridge, Slate creek, Pend Oreille county, Washington, to unnamed interest; Interstate Engineering & Construction Co., Newport, Wash., general contractor.

100 tons, building, state penitentiary, Gratersford, Pa., to Frank Weaver, Landsdale, Pa.

130 tons, state highway bridge, Farley, Mo., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

105 tons, bridge, Southfield road, Detroit, for Pennsylvania railroad, to American Bridge Co., Pittsburgh.

Shape Awards Compared

	Tons
Week ended April 22	14,483
Week ended April 15	5,215
Week ended April 8	8,545
This week in 1932	11,500
Average weekly, 1932	14,285
Average weekly, 1933	10,185
Average weekly, March	12,610
Total to date, 1932	237,290
Total to date, 1933	173,154

Contracts Pending

150,000 tons, mid-town vehicular tunnel from Thirty-eighth street, Manhattan, N. Y., to Weehawken, N. J.; approval of $75,000,000 loan by R. F. C. indicated, and announcement expected shortly.

1500 tons, jail, San Francisco; Anderson & Ringrose, San Francisco, low for general contract at $568,988.

1200 tons, veterans' hospital, Roanoke, Va.; Murch Bros., St. Louis, low.

900 tons, highway bridge, Culbertson, Mont.

700 tons, postoffice, Binghamton, N. Y.

700 tons, state bridges, Chickasaw, Tallahatchie, Leflore-Tallahatchie, and Monroe counties, Mississippi; bids May 2.

550 tons, packing plant, J. J. Felin, Philadelphia; Frank G. English & Sons, that city, awarded general contract.

500 tons, Howard university building, Washington.

375 tons, Valverde and Bernasconi tunnels, metropolitan water district, Los Angeles; general contract for Valverde tunnel to Dravo Contracting Co., Pittsburgh; for Bernasconi tunnel to Hamilton & Gleason, Redlands, Calif.

300 tons, brewery addition, Lowell, Mass.

285 tons, grade crossing, Salem, N. Y., for Delaware & Hudson railroad.

250 tons, Lehigh Valley railroad grade crossing elimination.

200 tons, conversion work on Mississippi river bridge, Rock Island, Ill.

170 tons, mainly sheet piling, Charles river basin, Boston; bids April 27.

162 tons, Eagle mountain, Hayfield and Mecca Pass tunnels, metropolitan water district, Los Angeles; bids May 22.

160 tons, highway bridge, Hurley, Ulster county, N. Y.

125 tons, courthouse, Sheboygan, Wis.; bids April 26.

100 tons, postoffice, Bloomsburg, Pa.

Unstated tonnage, department store addition, Lits Bros., Philadelphia; Simmons & Simmons, that city, architects, preparing plans.

Unstated tonnage, produce exchange building, Smithfield and Diamond streets, Pittsburgh, to be built by Kaufmann Department Stores Inc., Pittsburgh, at cost of $2,800,000.

Langdon-Faulkner-Fisk, 721 Virginia street, Seattle, has been formed by the affiliation of F. L. Fisk with the Langdon-Faulkner Co. Mr. Fisk formerly was associated with the Kewanee Boiler Corp., Kewanee, Ill., and the new firm will represent that company in Seattle territory.

Concrete Bars

Demand Continues Light, With Awards Restricted to Small Projects—April Specifications at Pittsburgh Are Largest of Year, and Prices There Are Firmer

REINFORCING BAR PRICES, PAGE 43

Pittsburgh—Firmness is evident in the market for new billet steel, with mill lengths at 1.40c, Pittsburgh. The prevalence of small jobs is noted. Another Pennsylvania state letting is scheduled for April 28. April mill specifications for new billet bars are considerably better than for any prior month this year.

Cleveland—Reinforcing steel fabricators here figure less than 200 tons was awarded in the Cleveland area during the week. State work has not yet appeared. The market is nominal at 1.30c to 1.40c, base, Cleveland, for mill lengths of new billet bars, to distributors.

Chicago—A dearth of inquiries and orders still is noted in the reinforcing bar market. Some state and municipal work is in prospect, while little business is pending for federal construction. A courthouse at Sheboygan, Wis., will take around 175 tons, while several hundred tons remain to be placed for Indiana road work. Quoted prices generally are adhered to, but lack the test of large purchases.

New York—Sales of concrete bars in small lots have improved slightly, but the aggregate tonnage is light. Several sewer projects in New York city are active. Prices are unchanged at 1.40c, Pittsburgh, for mill lengths.

Contracts Placed

1200 tons, Louisville, Ky., sewer, to Carnegie Steel Co., Pittsburgh.

425 tons, Chevy Chase reservoir, Glendale, Calif., purchased in open market.

400 tons, state highway, Tremble and Carroll counties, Kentucky, to Jones & Laughlin Corp., Pittsburgh; through Southeastern Construction Co., Eminence, Ky., general contractors.

269 tons, state highway work, San Francisco county, California, to Soule Steel Co., San Francisco, previously reported as going to unnamed interest.

220 tons, school, Kilgore, Tex., to Austin Bros., Dallas, Tex.; C. S. Lambie & Co., Amarillo, Tex., general contractor.

Contracts Pending

700 tons, Fifth street bridge, Richmond, Va., for Richmond Bridge Corp.; T. A. Loving, North Carolina, low on general contract.

650 tons, jail, San Francisco; Anderson & Ringrose, San Francisco, low for general contract.

460 tons, state prison, Dannemora, N. Y.; Lowman Construction Co., Elmira, N. Y., low bidder.

365 tons, sewer, Avenue L, Brooklyn, N. Y.

270 tons, Eagle mountain, Hayfield and Mecca Pass tunnels, metropolitan water district, Los Angeles; bids May 22.

200 tons, First street bridge, Richmond, Va., for Richmond Bridge Corp.; J. S. Bowers, Whiteville, N. C., low on general contract.

175 tons, courthouse, Sheboygan, Wis.

125 tons, brewery addition, Lowell, Mass.

109 tons, roadwork, Chickasaw county, Mississippi; bids May 2.

100 tons, water plant, Albany, N. Y.

Unstated tonnage, veterans' hospital, Roanoke, Va.; Murch Bros. Construction Co., St. Louis, low on general contract.

Coke

Little Covering of Coke—Domestic Is Being Stocked

Coke Prices, Page 44

Coke continues unresponsive to general improvement in the iron and steel markets, except at Chicago and St. Louis, where shipments of both foundry and domestic grades are improved over March. Foundries which have been covering for pig iron and scrap do not appear anxious concerning coke.

Dealers at Chicago are stocking domestic coke in anticipation of a rise May 1. Resumption of brewing has aided demand for industrial coke at St. Louis. Lower prices on domestic by-product coke are effective in Ohio, Indiana and Michigan, differentials on egg and nut being eliminated.

Concrete Awards Compared

	Tons
Week ended April 22	2,245
Week ended April 15	751
Week ended April 8	1,709
This week, 1932	4,767
Average weekly, 1932	3,920
Average weekly, 1933	3,141
Average weekly, March	3,425
Total to date, 1932	80,092
Total to date, 1933	53,409

Steelworks Among Winners In Chicago Safety Contest

The eleventh annual Mid-west Safety conference was held at Chicago April 12 and 13, under auspices of the Chicago Safety council. The conference was divided into five separate sessions pertaining to fire prevention, public safety, training and educational methods, handling materials and the maintenance of interest in safety.

A. F. Burtt, safety director, American Manganese Steel Co., Chicago Heights, Ill., discussed protective apparel in industrial plants at the handling materials session. Additional discussion at this session dealt with mechanical equipment and plant layout and housekeeping with reference to improvement of safety conditions. At a banquet Thursday evening, 16 manufacturing companies in the Chicago area were awarded safety plaques as winners in their respective divisions in the safety contests sponsored by the Chicago Safety council between July and Dec. 31, last year. A total of 150 plants with 72,513 employes participated, and 61 of the plants operated without a lost-time accident.

Among winners were Youngstown Sheet & Tube Co.'s Indiana Harbor works, Western Electric Co., American Brake Shoe & Foundry Co., Acme Steel Co., and the South Chicago works of Republic Steel Corp.

Ferroalloys Stronger

Ferroalloy Prices, Page 44

With rapid expansion in steelmaking operations and the sharp decline in the American dollar abroad, higher prices are expected on ferromanganese in the near future. Meanwhile, shipments continue to expand, with a portion going into consumers' stocks. Domestic spiegeleisen, 19 to 21 per cent, shows no change at $24, furnace, for spot shipment.

Sheer Bars Firmer

Semifinished Prices, Page 44

Sheet bars, billets and slabs now are generally quoted $26, base, Pittsburgh, Youngstown, O., and Cleveland. Recent concessions at $24 on sheet bars appear to have been eliminated. Forging billets are $31, and wire rods $35.

Pipe

Rising Pig Iron Prices Imparting Strength to Cast Pipe—St. Louis Purchases 3400 Tons

PIPE PRICES, PAGE 43

Pittsburgh—A large tonnage of tubular goods will be required for the Roanoke, Va., veterans' hospital, as indicated by the low bid of $277,100 for the plumbing and heating pipe. Standard pipe still is moving slowly, the recent reduction in prices failing to develop much interest. One automotive company has been a steadily increasing buyer of mechanical tubing.

Chicago—Cast pipe activity continues at its recently improved rate. St. Louis has divided 3400 tons of 6 to 20-inch pipe among three producers for its 1933 water department extentions and replacements. A local interest has booked 215 tons of 8 to 12-inch pipe for Toledo, O., and 200 tons of various sizes for Mt. Carmel, Ill. Inquiries are slightly more numerous but consist principally of small individual lots. The rising trend in pig iron prices is seen as a strengthening factor for pipe quotations.

Boston—Despite the recent seasonal flurry, buying of cast iron pipe is below normal, although heavier than expected. Prices in this district are firmer than in other eastern markets. Leominster, Mass., has purchased 600 tons; and a southern New England water company, 1600 tons.

New York—White Plains, N. Y., has placed 480 tons of cast pipe and a Pennsylvania foundry has booked 1600 tons for a southern Connecticut water company. Inquiry is light, but shows some seasonal improvement. Pipe is moving at around $30, eastern foundry.

Birmingham, Ala.—Several pipe contracts are expected, but business is coming in slowly, and production is held down to 30 per cent. Shipments are slower.

Cast Pipe Placed

3400 tons, St. Louis: 2000 tons 12-inch, 135 tons 16-inch, to American Cast Iron Pipe Co., Birmingham, Ala.; 1000 tons, 20-inch, to National Cast Iron Pipe Co., Birmingham; 65 tons, 6-inch, 195 tons 8-inch to McWane Cast Iron Pipe Co., Birmingham.

600 tons, Leominster, Mass., to unstated foundry.

480 tons, White Plains, N. Y., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

215 tons, 8 to 12-inch, Toledo, O., to James B. Clow & Sons, Chicago.

200 tons, various sizes, Mt. Carmel, Ill., to James B. Clow & Sons, Chicago.

138 tons, 8-inch class 150, Veterans' hospital, Livermore, Calif., to unnamed interest.

120 tons, Stoneham, Mass., to Warren Pipe Co. of Massachusetts, Boston.

Unstated tonnage, Melrose, Mass., to Warren Pipe Co. of Massachusetts, Boston.

Cast Pipe Pending

700 tons, 24-inch, New Rochelle, N. Y.

Unstated tonnage, water system, Michigan City, Ind. Project includes 500,000-gallon steel tank. R. F. C. to loan $300,000.

Unstated tonnage, water system, Crestline, O. R. F. C. to loan $40,000.

Steel Pipe Pending

Unstated tonnage, veterans' hospital, Roanoke, Va.; J. L. Powers, Bennettsville, N. C., low at $277,100.

Refractories Are Firmer; Fire Clay Brick Advances

Refractories Prices, Page 44

Pittsburgh—First and second quality fire clay brick have been advanced on a Missouri base with first quality now quoted $35 per 1000, f.o.b. works, and second quality $30, Missouri. This has had the effect of giving considerable strength to the market in Pennsylvania, Ohio, Illinois and Kentucky, where a chaotic condition had nearly resulted several months ago from an upset Missouri market when fire clay brick had been sold down to $10. Refractory brick buyers, led largely by bottlemakers and steel mills, have been increasing specifications now for a month to six weeks. The upward movement has been largely in fire clay and silica grades although chrome and magnesite bricks have shared to a degree. Magnesite and chrome prices remains respectively $61.50 and $42.50 per net ton.

Foreign Iron Ore Market Strengthening

Iron Ore Prices, Page 44

New York—Pending receipt of firm inquiries, importers of foreign iron ores are leaving their quotations nominally unchanged. However, higher prices appear imminent, as a result of developments in foreign exchange. Strength also is imparted by the improved statistical position abroad. Within the past month foreign stocks have been reduced by substantial purchases on the other side, and it is reported foreign prices have increased an average of about 15 per cent. Another factor for strength is the probability of higher water rates. On some shipments water transportation represents close to half of the delivered price on ore on this side. With the pound sterling moving rapidly upward in its relation to the dollar and used generally in the compilation of water rates, importers see higher rates exerting an influence on prices in the near future.

Cleveland—Lake Superior iron ore producers have been shipping from mines and stockpiles to upper lake docks for several weeks, but vessels have not started to move down the lakes, though expected to do so early in May. Consumers are beginning to figure their season's requirements. No demand, however, has yet appeared in the open market, and prices have not been determined. Stocks at lower lake docks and furnaces April 1 were nearly 5,000,000 tons less than a year ago, as shown by the following report from the Lake Superior Iron Ore association:

	Tons
Consumed in February	634,443
In March	593,024
Decrease in March	41,419
In March, 1932	1,225,904
On hand at furnaces April 1, 1933	24,486,207
On Lake Erie docks April 1, 1933	5,070,768
Total at furnaces and Lake Erie docks April 1, 1933	29,556,975
Total	34,491,289

Propose National Steel Home Institute

(*Concluded from Page* 14)

produce satisfactory steel homes be surrounded with the proper safeguards for the mutual benefit of all concerned?

Again, architectural design is admittedly the first point of public contact with the steel house, or any house. The proponents of today's designs, (largely builders), seem too ready to overlook popular design prejudices, and to be laboring under an impression that a radical departure from conventional wall materials requires a sharp cleavage away from all popular and accepted usage. The progress of the industry may be im-

peded for years by such an assumption. Architects, to whom the steel industry must look for a large part of its endorsement of steel houses, now look askance at existing designs. Expert study would determine types best suited to persuade home buyers to a new and more progressive system of house construction.

Architects and steel house builders are even now sensible of the need for critical research into the many problems answered today by half-baked opinions, and of the particular need for co-operative assistance to establish authorized steel house designs, data, and advantages in public favor.

The mutual concern of every manufacturer to control in some manner these and similar factors which will exert such profound and far-reaching influences on public acceptance, suggests that the minds of all responsible sales executives must meet in some form of profitable co-operation for upbuilding the new industry.

The community of interest in these problems is broad. Among manufacturers, salesmen, and engineers, there will be many differences of opinion as to how this field may be best developed, by what designs and methods of construction, and by what agencies it may be sold to the public. There are no ready-made answers for these questions.

But, when all the evidence is in, there will be just one set of facts, it will be to the highest interest of all concerned if, at the earliest possible moment, this set of facts be ascertained and substituted for the mass of misinformation which is otherwise certain to arise and to react with negative effect on steel house acceptance.

Strictly on the basis of the economic necessity for its authority, a way may be easily found by which a national steel home institute may be established. The usefulness of the institute in respect of its ability to compile and interchange information would be a primary and important function. If it were no more than that in the beginning, its right to existence would be sufficiently proved.

But, as the scene moves forward to its inevitable contact with the public, the demands for institute service and authority, would touch a dozen requirements of similar fundamental importance which only the institute would be equipped to deliver.

That, and the probable resultant saving of some millions of dollars is, to us, the consummation to be devoutly hoped for. And from the viewpoint of our experience it can eventuate in no way more certainly than that visualized by the establishment of a National Steel Home institute.

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Scrap

New York Central Sells 30,000 Tons to Steel Corp.—Prices Make Further Sharp Advances

Pittsburgh—The scrap market has advanced another 50 cents a ton and if events contributing to the rise last week continue, for the first time in several years it may become profitable for dealers to move frozen yard stocks. The present price on No. 1 steel is not certain, due to absence of mill orders, and gaged solely by the figures brokers indicate they might consider in taking business. Even though it is quoted at $10.25 to $10.75, some brokers would not consider orders under $11. Advances have been recorded on practically every grade of scrap, including the slow-moving specialties, and No. 2 steel is up now almost $1 a ton since a week ago. Several important direct scrap deals between the railroads and steel mills

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.00 to	7.00
Boston, dealers	3.50 to	3.75
Buffalo, No. 1	**7.00 to**	**7.25**
Buffalo, No. 2	**6.00 to**	**6.25**
Chicago	7.25 to	7.75
Cleve., No. 1	7.50 to	8.00
Cleve., No. 2	6.50 to	7.00
Det., No. 1 deal.	5.75 to	6.25
Det., No. 2 deal.	5.25 to	5.75
E. Pa. del. mill		7.00
E. Pa., No. 2 del.		5.50
Federal, Ill.	6.00 to	6.50
Granite City, Ill.	5.50 to	6.00
N. Y., deal. R. R.		5.00
N. Y. deal. No. 2	3.50 to	4.00
N. Y. deal. yd.	2.50 to	3.00
Pitts. No. 1	10.25 to	10.75
Pitts. No. 1 R. R.	10.50 to	11.00
St. L. No. 1 sel.	6.00 to	6.50
Valleys, No. 1	9.00 to	9.50

COMPRESSED SHEETS

Buffalo, dealers	**6.00 to**	**6.25**
Chi. (Factory)	5.00 to	5.50
Cleveland	7.00 to	7.50
Detroit, dealers	5.50 to	6.00
E. Pa. new mat.	5.50 to	6.50
Pittsburgh	10.00 to	10.50
Valleys	8.50 to	9.00

BUNDLED SHEETS

Buffalo	4.00 to	4.50
Cincinnati, del.	4.25 to	4.75
Cleveland	5.00 to	5.50
Eastern, Pa.		5.50
Pittsburgh	9.00 to	9.50
St. Louis	2.00 to	2.50

SHEET CLIPPINGS LOOSE

Chicago	2.00 to	2.50
Cincinnati	2.00 to	2.50
Detroit, dealers	2.25 to	2.75
St. Louis	1.50 to	2.00

STEEL RAILS SHORT

Birmingham	8.50 to	9.00
Boston, dealers	3.50 to	3.75
Buffalo	9.50 to	10.00
Chicago (3 ft.)	8.00 to	8.50
Chicago (2 ft.)	8.50 to	9.00
Cincinnati, del.	8.75 to	9.25
Detroit, deal.	8.50 to	9.00
Pitts. (open-hearth, 3 ft. and less)	10.75 to	11.25
St. Louis	7.00 to	7.50

STOVE PLATE

Birmingham	5.50 to	6.00
Boston, dealers	**2.00 to**	**2.50**
Buffalo	**7.00 to**	**7.25**
Chicago, net	5.00 to	5.50
Cinci., deal. net	3.50 to	4.00
Det., net deal.	2.50 to	3.00
Eastern Pa.	**5.50 to**	**6.00**
N. Y., deal. mill	2.50 to	3.00
St. Louis	5.50 to	6.00

COUPLERS, SPRINGS

Buffalo	8.50 to	9.00
Chicago	7.50 to	8.00
Eastern Pa.	8.50 to	9.00
Pittsburgh	11.00 to	11.50
St. Louis	6.00 to	6.50

ANGLE BARS—STEEL

Chicago	7.50 to	8.00
St. Louis	5.75 to	6.25

LOW PHOSPHORUS

Buffalo, billets and bloom crops	8.50 to	9.00
Cleveland bil. and bloom crops	10.00 to	11.00
Eastern Pa.	10.00 to	10.50
Pittsburgh billet bloom crops	11.50 to	12.00
Pitts., sheet bar crops	11.50 to	12.00

FROGS, SWITCHES

Chicago	6.50 to	7.00
St. Louis	5.50 to	6.00

SHOVELING STEEL

Chicago	7.25 to	7.75
Cleveland	5.75 to	6.00
St. Louis	5.00 to	6.00

RAILROAD WROUGHT

Birmingham	6.50 to	7.00
Boston, dealers	1.00 to	1.50
Buffalo, No. 1	**4.25 to**	**4.75**
Buffalo, No. 2	**7.00 to**	**7.25**
Chi., No. 1, net	5.00 to	5.50
Chicago, No. 2	7.25 to	7.75
Cinci., No. 2	5.50 to	6.00
Eastern Pa.		7.50
N. Y., No. 1, deal.	2.50 to	3.00
Pitts. No. 1	10.25 to	10.75
St. Louis, No. 1	3.50 to	4.00
St. Louis, No. 2	**5.00 to**	**5.50**

SPECIFICATION PIPE

Boston	3.00 to	4.00
Eastern Pa.	**6.00 to**	**7.00**
N. Y., deal	2.00 to	2.25

BUSHELING

Buffalo, No. 1	**6.00 to**	**6.25**
Chicago, No. 1	4.50 to	5.00
Cinci., No. 1 deal.	4.25 to	4.75
Cinci., No. 2	2.50 to	3.00
Cleve., No. 2	4.75 to	5.25
Det., No. 1 new deal.	4.75 to	5.25
St. L., No. 1	3.00 to	3.50
Val. new No. 1	8.50 to	9.00

MACHINE TURNINGS

Birmingham	2.50 to	3.00
Boston, dealers	0.75 to	1.00
Buffalo	**3.75 to**	**4.25**
Chicago	3.50 to	4.00
Cinci., deal	3.00 to	3.50
Cleveland	4.25 to	4.75
Detroit	3.00 to	3.50
Eastern Pa.	3.50 to	4.00
N. Y., deal.	1.35 to	1.50
Pittsburgh	7.00 to	7.50
St. Louis	1.50 to	2.00
Valleys	6.75 to	7.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	0.75 to	0.90
Buffalo	**3.00 to**	**3.50**
Cinci., deal	3.00 to	3.50
Cleveland	4.75 to	5.25
Detroit, deal.	4.00 to	4.50
Eastern Pa.	3.50 to	3.75
N. Y., deal.	1.35 to	1.50
Pittsburgh	5.75 to	6.25

CAST IRON BORINGS

Birming., chem.	8.50 to	9.50
Birming., plain	2.50 to	3.00
Boston, chem.	5.50 to	6.00
Boston, dealers	1.00 to	1.25
Buffalo	**3.50 to**	**4.00**
Chicago	3.50 to	4.00
Cinci., deal.	3.00 to	3.50
Cleveland	4.75 to	5.25
Detroit, deal.	4.00 to	4.50
Eastern Pa.	3.50 to	3.75
E. Pa., chem.	8.00 to	10.00
N. Y., deal.	1.00 to	1.50
Pittsburgh	6.00 to	6.25
St. Louis	2.00 to	2.50

PIPE AND FLUES

Cinci., deal.	3.25 to	3.50

RAILROAD GRATE BARS

Buffalo	4.00 to	4.50
Chicago, net	5.00 to	5.50
Cincinnati	4.50 to	5.00
Eastern Pa.	5.50 to	6.00
N. Y., deal.	3.50 to	4.00
St. Louis	4.50 to	5.00

FORGE FLASHINGS

Boston, dealers	2.00 to	2.50
Buffalo	5.50 to	6.00
Cleve. ov. 10 in.	6.00 to	6.50
Detroit	4.00 to	4.50

FORGE SCRAP

Boston, dealers	1.75 to	2.00
Chicago	6.50 to	7.00
Eastern Pa., del.	5.00 to	5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to	5.50
St. Louis	3.50 to	4.00

AXLE TURNINGS

Boston, deal.	2.50 to	3.00
Buffalo	**6.00 to**	**6.25**
Chi., elec. fce.	4.50 to	5.00
Cleveland	5.50 to	6.00
Eastern Pa., del.	5.50 to	6.25
Pittsburgh, O. H.	7.00 to	7.50
St. Louis	3.50 to	4.00

STEEL CAR AXLES

Birmingham	9.50 to	10.00
Boston, ship. pt.	**5.50 to**	**6.50**
Buffalo	10.00 to	10.50
Chicago, net	9.00 to	9.50
Eastern Pa.		14.50
St. Louis	8.75 to	9.25

SHAFTING

Boston, ship. pt.	6.00 to	6.50
Eastern Pa.	11.50 to	12.50
N. Y., deal.	5.50 to	6.00
St. Louis	7.50 to	8.00

CAR WHEELS

Birming., iron	7.00 to	7.50
Boston, iron deal.	3.00 to	3.25
Buffalo, iron	7.00 to	8.00
Buffalo, steel	8.50 to	9.00
Chicago, iron	8.50 to	9.00
Chi., rolled steel	7.50 to	8.00
Cincinnati iron	6.25 to	6.75
E. Pa. iron		8.50
E. Pa. steel	8.50 to	9.00
Pitts., iron	8.25 to	8.75
Pitts., steel	9.75 to	10.25
St. Louis, iron	5.00 to	5.50
St. Louis, steel	6.00 to	6.50

NO. 1 CAST SCRAP

Birmingham	7.50 to	8.50
Boston, No. 2	2.25 to	2.50
Boston, textile	6.00 to	6.25
Buffalo, cupola	**9.00 to**	**9.25**
Buffalo (mach.)	9.50 to	10.00
Chicago, agri., net	5.25 to	5.75
Chi., mach. net	6.50 to	7.00
Chi., railroad net	5.75 to	6.25
Cinci., mach. cup	6.50 to	7.00
Cleve. cupola	7.00 to	8.00
Det., net deal.	6.50 to	7.00
E. Pa. cupola	8.50 to	9.50
N. Y., cup. deal.	4.50 to	5.00
N. Y., del. local foundries	7.00 to	7.50
Pitts., cupola	9.00 to	9.50
San Fran., del.	13.50 to	14.00
Seattle	4.50 to	6.50
St. L. No. 1	6.00 to	6.50
St. L. No. 1 mach.	6.25 to	6.75

HEAVY CAST

Boston, del.	3.25 to	3.50
Bost., mach. cast	7.00 to	7.50
Buffalo, break	**6.50 to**	**7.00**
Cleve., break	5.50 to	6.00
Detroit, auto net deal.	7.50 to	8.00
Det. break., deal.	4.00 to	4.50
Eastern Pa.	8.00 to	8.50
N. Y. No. 1, deal.	**4.50 to**	**5.00**
N. Y. break, deal.	**4.00 to**	**4.50**
Pittsburgh	8.00 to	8.50

MALLEABLE

Boston, consum.	6.75 to	7.25
Buffalo	8.00 to	8.50
Chicago, agri.	**5.00 to**	**5.50**
Chicago, R. R.	6.50 to	7.00
Cinci., agri. del.	6.25 to	6.75
Cinci., R. R., del.	6.75 to	7.25
Cleveland, rail	7.50 to	8.00
Det. auto deal.	5.50 to	6.00
St. Louis	4.75 to	5.25

RAILS FOR ROLLING

5 feet and over

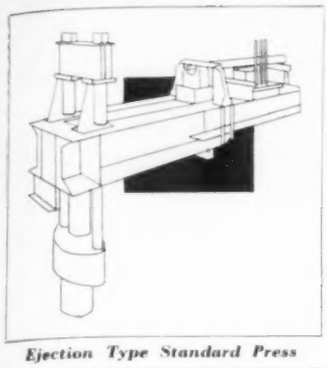
Birmingham	7.00 to	8.00
Boston, deal.	5.00 to	5.50
Buffalo	**7.00 to**	**7.50**
Chicago	8.00 to	8.50
Eastern Pa.		9.50
New York dealer	3.75 to	4.25
St. Louis	7.00 to	7.50

LOCOMOTIVE TIRES

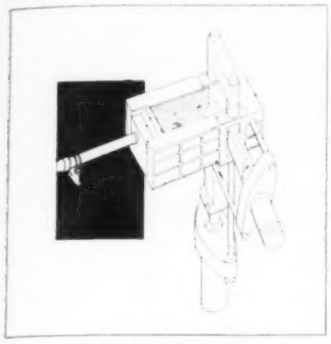
Chicago, cut	7.50 to	8.00
St. L., No. 1	5.00 to	5.50

LOW PHOS. PUNCHINGS

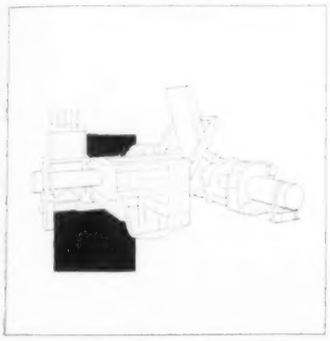
Buffalo	9.00 to	9.50
Chicago	7.50 to	8.00
Eastern Pa.	8.50 to	9.00
Pittsburgh	10.50 to	11.00



Ejection Type Standard Press



Three Ram Press for bulky scrap



Three Ram Hinged Cover Press for Drums, Etc.

LOGEMANN

A Full Line

Whether your scrap accumulation warrants a hand press—a car baler—or equipment in between—there is a Logemann press for the job. Fast working—efficient—Logemann balers answer every scrap metal need. They meet any installation requirement. And—they fill the bill of low cost operating demands.

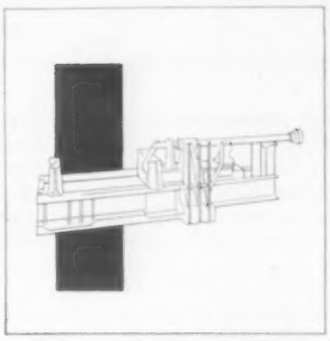
To bale scrap metal is an obvious saving. To bale it with a Logemann press makes this fact doubly certain. Fool proof mechanical features and long life construction offer an indisputable evidence of achievement. It is written indelibly in the profit records of industrial users. A Logemann press is an investment that pays.

Logemann engineers will be glad to prove this fact in your plant. Ask them.

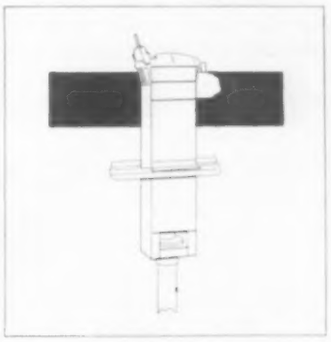
LOGEMANN BROS. CO.

3126 W. Burleigh Street, Milwaukee, Wis.

Branch Offices in Principal Cities

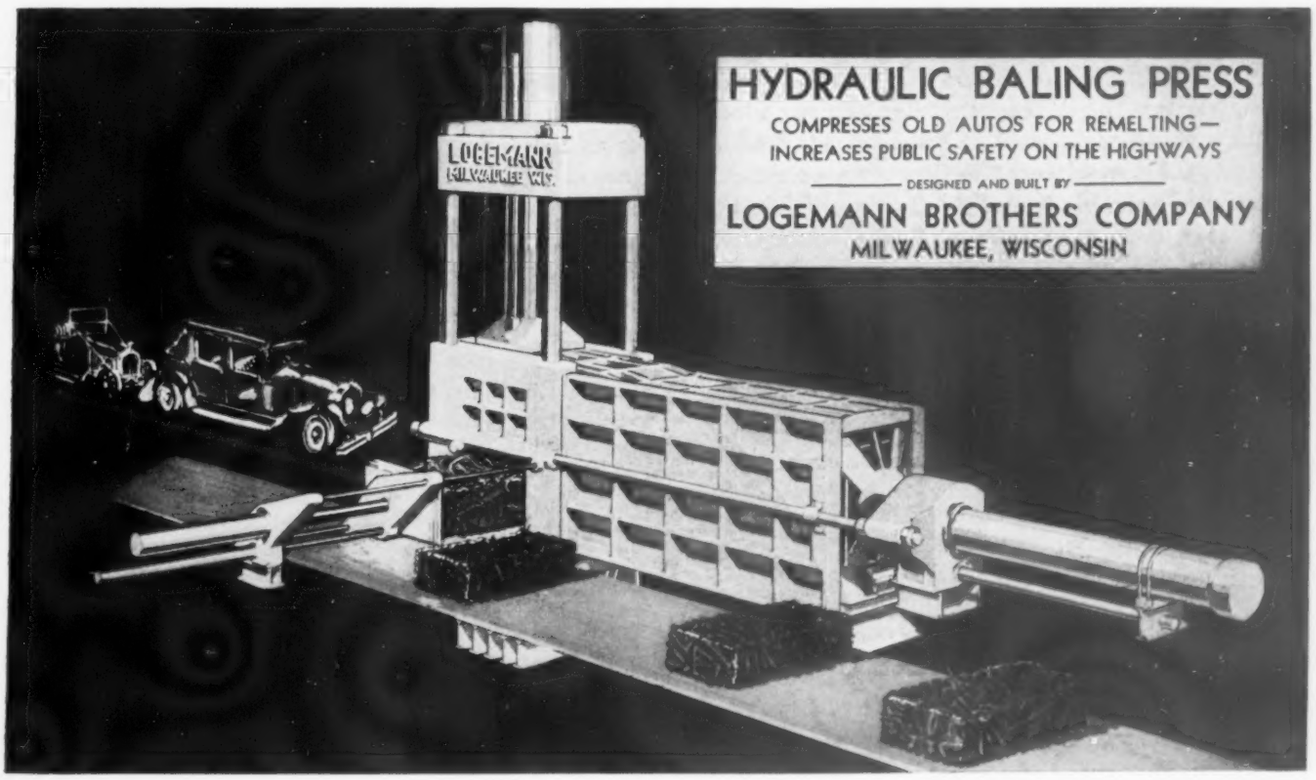


Horizontal Type Standard Press



Single Ram Press-- usually for cans

Mechanical Type Press



have developed, one of which was the sale of 30,000 tons of scrap by the New York Central railroad to Carnegie Steel Co.'s Farrell, Pa., and Youngstown, O., plants. Lacking definite confirmation, the Pennsylvania railroad is reported to have disposed of 100,000 tons of scrap in exchange for 25,000 tons of rails.

Cleveland—A general advance of 50 to 75 cents a ton has occurred here, the first in many months. Republic Steel Corp. has bought a minimum of 25,000 tons of No. 1 heavy melting, pressed sheets, and No. 2 melting steel.

Boston—Prices are firm on all grades of scrap but there has been some decline in activity. Export buying is light. Worcester is paying $5 to $5.50 for No. 1 steel.

Chicago—Scrap prices have advanced sharply on moderate buying. Following purchases of a small tonnage of heavy melting steel at $6, a sale of this grade has been made at $7.50 and as high as $7.80 has been paid for dock accumulations. Dealers hesitate to take orders at recent prices in view of scarcity. Prices on other grades are nominal in view of absence of buying.

New York—Scrap prices are firm. Domestic demand is light and activity continues to center about export buying of No. 1 and 2 steel.

Philadelphia—Buying of a round tonnage by Worth Steel Co., Claymont, Del., has established the market on No. 1 heavy melting steel firmly at $7 delivered, an increase of 50 cents. No. 2 heavy melting steel also is higher at $5.50, delivered, on a basis of new offerings by an eastern Pennsylvania consumer. Indicative of general strength is an increase of 50 cents in the price of No. 1 steel by a leading dealer for shipment against an old order for Coatesville, Pa.

Detroit — Iron and steel scrap prices have advanced 25 to 50 cents, on the strength both of improved consuming demand and increasing shortage of material. With all six open hearths of one steel plant active its requirements are broader. Dealers continue unwilling to sell their accumulations and thus far improved automobile production has not been fully reflected in larger offerings. There is some discussion that scrap will move into the Detroit district rather than out of it this summer. Chrysler has had attractive offers for its accumulations of 17,000 tons, mostly bundles and turnings.

Buffalo—Buffalo dealers are withdrawing quotations on scrap. At present scrap can be shipped from Buffalo to Pittsburgh to better advantage than it could be sold here under nominal quotations last prevailing in local transactions, dealers report.

Cincinnati—A stronger scrap market is evident here and sources of supply are tightened. Advance of 25 cents a ton of heavy melting steel, to $5.50 to $6 has occurred.

St. Louis—Strength elsewhere and scant offering of steel and iron scrap locally are reflected in a firm situation here.

Birmingham, Ala.—Better tone is noted in iron and steel scrap, with some price adjustments. None of the big railroad tonnages has been purchased by dealers here though one melter took a small lot.

Toronto, Ont.—Trading in iron and steel scrap is confined entirely to special grades. There was a slight improvement in sales of cast scrap. Steel grades continue at a standstill, and most iron grades are dull. Dealers offer $9 to $9.50 per net ton for cast, with little available, but otherwise are out of the market.

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STRIP STEELS
ZINC • COPPER • TIN
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ABREAST of modern manufacturing needs—abreast of the requirements to sell products today, Thomas Steel, thru specialization, meets today's needs in cold rolled strip steel. For stamping and drawing, Thomastrip specifications are specialized to your needs. In finishes, Thomastrip is available to you with electro zinc, copper or tin coat, or in plain or bright finish. Thomas service is specialized service—the kind of service that solves cost and production problems and increases the salability of products. Without obligation, a Thomas representative will promptly analyze your requirements.

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COLD ROLLED STRIP STEEL

The THOMAS STEEL CO.
WARREN OHIO

SPECIALIZED PRODUCTION
COLD ROLLED STRIP STEEL

Pig Iron

Prices Higher, Including Southern and Foreign—Note More Advance Covering

PIG IRON PRICES, PAGE 44

Pittsburgh—Sellers of pig iron in some instances are withdrawing prices on old contracts made with foundries and others in the merchant trade, and there has been some test of the present levels, which are $15 on malleable and foundry grades, $15.50 for bessemer and $14 for basic, all Pittsburgh district furnace base. Inquiry is considerably heavier and in several hundred ton lots many foundries are sounding out the market. Low phos pig iron at $24, Valley furnace, on several recent deals is moving in an improved volume. Furnace pig iron stocks continue low with but one or two exceptions, although the improved tone has not prompted any merchant producer as yet to relight.

Cleveland—Recent advances in scrap prices have led to a larger use of pig iron in foundry mixtures, this being reflected in still further gains in pig iron shipments. The Corrigan, McKinney Steel Co. has lighted a second blast furnace; two of its four stacks now operating, this being due to demand for merchant pig iron as well as increased steel requirements. Sales here for the week held fairly close to those of the week preceding, approximately 5000 tons. Inquiries are expected to increase this week. The price for local delivery remains $15, base, Cleveland furnace; but for outside shipments $14.50 now is general, up $1.50 from the price three weeks ago. On the strength of this another lake furnace interest has advanced its prices 50 cents.

Chicago—Pig iron orders and shipments continue to gain slowly, demand showing better diversification. Automotive shipments gained further the past week and dominate the market. Prices are firmly held and what shading previously had been noted on the $15.50 furnace price for No. 2 foundry and malleable has disappeared. The supply of iron still is large but prospects for higher figures have been enhanced by the sharp upturn in other commodities. Some speculative buying has been noted, confined principally to larger interests. Although southern iron has been advanced $1 a ton, the delivered Chicago quotation is expected to continue competitive with northern iron.

Boston—New inquiry for pig iron has declined. Several of the larger lots pending have been placed, including 500 tons for Crompton & Knowles Co., Worcester, Mass., with the Port Henry, N. Y., furnace, and several hundred tons for the Springfield, Mass., works of the Westinghouse Electric & Mfg. Co., the latter taking eastern Pennsylvania iron. Small lots describe the remainder of purchases. Prices on the general run of business are firm, but are not held on larger lots where competition is keen for the business. The New England furnace holds to $16, furnace minimum, regardless.

New York—Advance in foreign iron is indicated by current developments in the foreign exchange. Importers quote unchanged figures on tonnage they can supply from stock

ATLAS GAS-ELECTRIC LOCOMOTIVES

45 Ton Locomotive especially suitable for economical interplant switching service.

OTHER ATLAS PRODUCTS

Gas-Electric and Diesel-Electric Locomotives . . . Electric Transfer Cars for Blast Furnaces and Steel Plants . . . Stockhouse Scale Cars for Blast Furnaces . . . Concentrate and Calcine Cars for Copper Refineries . . . Automatic and Remote Controlled Electric Cars . . . Pushers, Levellers and Door Extractors . . . Coal Charging Lorries, Coke Guides and Clay Carriers . . . Atlas Patented Coke Quenching Cars for By-Product Coke Ovens . . . Atlas Patented Indicating and Recording Scales . . . Special Cars and Electrically Operated Cars for every conceivable Purpose.

THE ATLAS CAR & MFG. CO.

Engineers . . . Manufacturers

CLEVELAND, OHIO

or on material now in transit, but on future deliveries the disposition is to receive cable advices before submitting a bid. Possibly the largest open inquiry is that of the A. P. Smith Mfg. Co., East Orange, N. J., for 200 tons each of No. 2 plain and No. 2X foundry iron for third quarter. Southern iron has been advanced $1.

Philadelphia—Pig iron prices continue strong, notwithstanding a continued lull in trading. With iron and steel consumers generally becoming convinced that prices will advance soon, sellers appear content to stand firm on new prices established April 1. Further encouragement is derived from an upward tendency in foreign foundry iron, and although the latter apparently still is being offered at less than the $13.50 base, furnace, price on eastern Pennsylvania foundry, developments in the foreign exchange point to a further rise. Southern iron is being advanced $1 for delivery here.

Recent arrival of 5677 tons of Royal Dutch iron went almost entirely into old orders, it is said, with little available for stock.

Buffalo—Interest in pig iron appears to be broadening. There has been considerable forward buying the past week. Eastern prices are stiffening and the situation is said to be the strongest in many weeks. A single furnace continues to produce. Many consumers have asked for quotations to cover advance needs.

Cincinnati—Southern furnaces, announcing price increases to $12, base, Birmingham, have adopted a new scale for this territory, figured 50 cents below the accepted quotations on northern iron at the nearest furnace. For example, southern iron is $15.25, delivered, Hamilton, nearest northern furnace to Cincinnati, and at $15.82, delivered Cincinnati. Some of the other delivered prices, base, with 25 cents for silicon differentials, are: Dayton, O., $16.01; Springfield, O., $16.39; Columbus, O., $16.10; Richmond, Ind., $16.38, and Indianapolis, $17.15.

St. Louis—Tone of the pig iron market is strong, with additional melters entering for small to fair tonnages for this quarter. While consumer stocks are mainly small, a cautious policy is being pursued in replenishing. Both mills and foundries are anxiously awaiting new business before further raw material commitments. In the buying movement earlier this month and in March, a considerable segment of second quarter requirements was provided for. Much of this iron was covered prior to the recent advance of $1. The delivered St. Louis price for southern iron is $15.85. Southern blast furnaces have eliminated differentials formerly applying in this and adjacent territory. The leading local producer quotes $15.50 for No. 2 foundry and $16 for malleable, f.o.b. Granite City.

Birmingham, Ala.—Alabama producers have raised the market $1 to $12, Birmingham, and are eliminating the $1 differential which formerly applied on outside sales.

Toronto, Ont.—Merchant pig iron sales continued at a slightly higher level, with total awards in the week about 400 tons. Melters are adhering to hand-to-mouth buying. Local blast furnace representatives look for a bigger movement of iron with the opening of Great Lakes navigation. Prices are firm but unchanged.

STRIP STEEL
HOT and COLD ROLLED

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also
RUST RESISTING METALS
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analyses

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Philadelphia, Pa.

2100 Fisher Bldg.
Detroit, Mich.

Steel Sales Corp.
129 South Jefferson St.
Chicago, Ill.

H. L. Brown,
2001 Carew Tower
Cincinnati, Ohio

Men of Industry

(*Concluded from Page* 19)

in which he visited the U. S. S. R., England and the Continent.

□ □ □

Max Schlossberg, formerly with the Price Iron & Steel Co., Chicago, is now associated with M. S. Kaplan Co., Chicago.

□ □ □

H. W. Cope, former assistant director of engineering for the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been made assistant to the vice president, responsible for the co-ordination of certain headquarters, engineering departments and district office engineers.

□ □ □

Mark R. Woodward, for the past 15 years assistant chief engineer of the Lehigh Portland Cement Co., Allentown, Pa., has been appointed to the cement equipment division of the Babcock & Wilcox Co., New York, with headquarters in its Chicago office.

□ □ □

Sir Robert A. Hadfield, chairman of Hadfield's Ltd., Sheffield, inventor of manganese steel, and the author of "Faraday and His Metallurgical Researches" and other books and numerous papers on the metallurgy of iron and steel, was recently elected an honorary member of the Russian Academy of Sciences, at Leningrad. At a recent lunch given in honor of Sir Robert by the Soviet ambassador in London, Sir Robert reviewed the contributions of Russian scientists

to the metallurgy of iron and steel emphasizing Mendeleef and Tschernoff.

□ □ □

Fred B. Jacobs, from 1920 to 1932 editor of *Abrasive Industry*, has been appointed general sales and advertising manager of the abrasive division of the Cleveland Container Co., Cleveland. Before joining the Penton Publishing Co., publisher of *Abrasive Industry*, in 1917, he was associated with the Carborundum Co. and the Abrasive Co.

□ □ □

Harry J. Fisher, who has recently engaged in independent sales work, has been retained by the Reliance Electric & Engineering Co., Cleveland, as consultant in connection with motor-drive applications in the steel industry. Previous to October, 1931, Mr. Fisher was connected with the Reliance organization for 14 years, specializing in steel-mill engineering development and sales work.

□ □ □

George S. Case, of Cleveland, has resigned as president of the Peck, Stow & Wilcox Co., Southington, Conn., and becomes chairman of the board of directors. Mark J. Lacey, of New Britain, Conn., vice president and general manager for the past three years, has been elected president and will continue as general manager. He formerly was associated with the Landers, Frary & Clark Co.

Ralph W. Hurlbut has been elected secretary and comptroller to fill the vacancy caused by the resignation of Arthur G. Potter. Samuel C. Wilcox was elected assistant secretary-treasurer. Otto J. Blank has resigned as vice president and factory manager. Frank L. Wilcox of Berlin remains vice president, and Charles F. Treadway of New Haven, Conn., continues as vice president and treasurer. Edward G. Hackbarth was appointed assistant to the president, and Adolph J. Trapp superintendent.

Equipment

Dawn of Sellers' Market Is Stimulus to Price Inquiries

Chicago — Equipment purchases generally are confined to small individual lots. The market is lacking in large inquiries, although the total volume is increasing slowly. Users show less disposition to defer closing on what purchases are considered, although prices are considered carefully and used machinery is in heavier demand than formerly. Railroad inquiries are made up of only small lots. Northern Pacific railroad is in the market for a punch and shear, while the Milwaukee road has yet to close on a lathe and press. Steel company buying is light. One mill is inquiring for three grinders. Some bottling equipment manufacturers have increased operations sharply.

Cleveland—Sales of machine tools and equipment are fair, although mostly for small lots and used tools. April business for most dealers will show a gain over March. Rumors of higher prices attendant with the projected currency inflation have stimulated inquiries seeking confirmation of present quotations, indicating that there is potential buying in the market. List price reductions of from 5 to 15 per cent on one line of machines were announced recently. The argument of impending higher prices is being used as a sales lever, but with what success remains to be seen.

Pittsburgh—Purchase of the 4-high mill which American Sheet & Tin Plate Co. first inquired for several months ago, is being delayed. Practically the only activity in this district is in inquiries and occasional orders which steel mills are placing for equipment to make precision rounds for merchant bar mills. This development, which started fairly recently, has spread so that almost all bar mills are seeking to obtain this method of producing hot-rolled bars to close tolerances.

New York—Machinery inquiry and buying is dull, with no large lists active. Railroads are buying practically no shop equipment, several, in fact, offering used tools for sale at greatly reduced prices. H. F. Allen Co. has booked a milling machine, Sidney Machine Tool Co. two engine lathes, and Cincinnati Milling Machine Co. and Cincinnati Grinders Inc. a milling machine, for various navy yards.

Worcester, Mass.—Demand for new plant equipment and machinery is light. A western Massachusetts electrical appliance company is compiling a small list of machinery for possible purchase, but formal inquiry has not materialized. Some spotty improvement in demand for textile mill equipment is noted, repair part business in this line having been fairly brisk until recently. Textile machinery builders are figuring on one large installation in the south.

UNITED'S NEW FLYING SHEAR

A new precision type flying shear for shearing light gauge cold strip was recently demonstrated at the United Engineering & Foundry Co's. Frank-Kneeland Plant at Pittsburgh.

The shear possesses several distinct advantages over other types of shears previously built for this service. It will operate at a maximum speed of 300 ft. per minute; will cut any length of cold strip from 13 to 27 in. by increments of $\frac{1}{64}$ and from 27 to 54 in. by increments of $\frac{1}{32}$ in any width up to 36 in. and from .006 to .025 thick.

The shear is so arranged that any desired length within the range given above will be the first piece after the front crop, and the inconvenience of trial pieces is avoided. The mechanism controlling the length of piece cut is not subject to errors due to frictional or hydraulic variations, and will therefore remain accurate for an indefinite period. The knives are synchronized with the speed and path of the strip, while the shearing action is in a vertical plane and the cut is clean and square.

Further particulars and a moving picture demonstration may be obtained by prospective customers on application.

UNITED

ENGINEERING & FOUNDRY COMPANY
PITTSBURGH — PENNSYLVANIA

Warehouse

Jobber Sales Continue Gain: Cold-Drawn on Single Base

Pittsburgh—Cold-drawn flats and squares are now quoted on the same basis as rounds and hexagons out of Pittsburgh warehouses. This represents a waiving of the usual 50-cent differential forced by dropping of this extra in competitive warehouse districts. The price of carbon bars at 2.60c is under considerable pressure by inroads of mill service in town though other warehouse prices are unchanged. Demand is running heavier than at the same time in March.

New York—Warehouse volume shows little change, although some jobbers note an increase in small miscellaneous orders. Prices are unchanged and steadier.

Chicago—Sales make the best showing for the month to date, with demand better diversified. A fair volume of business comes from beer equipment makers and steel requirements for plant and building repair work are increasing.

Philadelphia—Warehouse buying has improved slightly with the tone considerably improved as a reflection of broadening anticipation of a turn in business conditions.

Detroit—Warehouse demand for iron and steel continues to improve, but the pickup is slow as mills are benefiting from the first wave of improvement in general business. A little brewery business has developed. A revision in the method of quoting blue annealed sheets now makes No. 8 and 10 gage the base at 2.90c.

Cincinnati—Jobber sales this month show improvement, with total tonnage probably considerably above March. Bars, plates and sheets are in fair demand, but there are few sales of structural steel.

St. Louis—Some seasonal requirements for iron and steel from store are noted but general warehouse business is quiet.

Bolt, Nut Orders Light; Mainly for Automotive Use

Bolt, Nut, Rivet Prices, Page 43

Pittsburgh and Cleveland bolt and nut makers are feeling a slight increase in demand, from automotive builders and partsmakers. Jobbers are also specifying at a better rate. Chicago producers find business dull, neither railroads nor agricultural implement manufacturers ordering. These users normally buy heavily.

Cleveland bolt and nut makers note automotive users again seeking to cover for the remainder of the year at present prices. Some increase in railroad specifications is expected for repair purposes.

Bolts and nuts are steady at 75 off list, with structural rivets at 2.25c, Pittsburgh, and 2.35c, Chicago.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS □

Baltimore*	2.35c
Boston††	2.90c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.40c
Los Ang.	3.30c
New Orleans	**2.50c**
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	3.00c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS □

Baltimore	2.35c
Boston††	3.10c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS □

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10c-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.10c
New Orleans	**2.75c**
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.62½c
Pittsburgh	2.30c
San Fran. cl.	2.00c
San Fran. lcl	2.40c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES □

Baltimore*	2.35c
Boston††	3.00c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	2.65c
Los Ang.	3.30c
New Orleans	**3.50c**
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES □

Baltimore*	2.35c
Boston††	3.00c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New Orleans	**3.50c**
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE □

Baltimore*	2.80c
Boston††	2.90c-3.00c
Buffalo	3.10c-3.25c
Chattanooga	3.44c
Chicago	2.75c
Cincinnati	3.05c
Cleveland	3.00c
Det., 8-10 ga.	2.90c
Houston	3.35c
Los Ang.	3.60c
New Orleans	**3.25c**
New York	2.75c
Portland	4.00c
Phila.*† (e)	**2.70c**
Pitts.**	**2.65-2.90c**
San Fran.	3.50c
Seattle	**3.50c**
St. Louis	3.00c-3.15c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK □

Balt.*†	3.50c
Boston††	3.85c
Buffalo	3.70c
Chattanooga	3.50c
Chicago	**3.30c**
Cincinnati	3.50c
Cleveland	3.25c
Detroit	3.30c
Los Ang.	4.20c
New York	3.25c
Phila.*†(e)	**3.15c**
Pitts.**	3.35c
Portland	4.50c
San Fran.	3.90c
Seattle	**4.25c**
St. Louis	3.70c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS □

Balt.*†	4.00c
Buffalo	4.00c
Boston††	4.00c
Chattanooga	3.95c
Chicago	**3.25c-3.50c**

††Base 15,000 lbs., extras on less.

Cincinnati	3.55c
Cleveland	**3.50c**
Detroit	3.50c
Houston	3.57c
Los Ang.	4.50c
New Orleans	**3.95c**
New York	3.50c
Phila.*† (e)	**3.50c**
Pitts.**	3.85c
Portland	5.00c
San Fran.	4.55c
Seattle	**4.75c**
St. Louis	4.00c
St. Paul	4.19c
Tulsa	5.10c

†BANDS □

Baltimore	2.65c
Boston††	3.40c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	2.85c
Los Ang.	3.80c
New Orleans	**2.75c**
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

†HOOPS □

Baltimore	2.65c
Boston	4.90c
Buffalo	3.95c
Chicago	3.50c
Cincinnati	3.75c
Det. No. 14 & lighter	3.65c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

†New extras apply.

COLD FIN. STEEL □

Rds.; Hex., Flats; Squares

Baltimore (c)*	3.48c
Boston	3.60c
Buffalo	3.00c
Chattanooga*	3.65c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New Orleans	4.25c
Philadelphia	3.35c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran(d)(f)	5.55c
Seattle (a)	4.50c
St. Paul (a)	3.20c
St. Louis	3.36c
Tulsa	4.65c

COLD ROLL. STRIP □

Boston 0.100 in., 500 lb. lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(a) Rounds, hex. only.
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) Bessemer analysis extras included.
‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.

Pacific Coast

Trading Quiet With Several Large Projects Awaiting New Financial Plans—Scrap for Export at Firmer Level—Japan Seeking Bargains With Sellers Slow to Accept Current Prices

San Francisco—(*By Air Mail*)—Activity in Pacific Coast iron and steel markets was not pronounced during the past week and only two awards of over 100 tons were noted. Interest was centered on opening of bids on 10,000 tons of structural shapes for the Bohemian club, San Francisco.

Glendale, Calif., rejected all bids on 425 tons of reinforcing bars for the Chevy Chase reservoir and purchased the material in the open market. Soule Steel Co. secured 269 tons for highway work in San Francisco county for the state. This was reported as being placed with an unnamed interest in STEEL, April 10.

The plate market has been exceptionally quiet of late. An Oakland, Calif., pipe shop bought close to 200 tons from Worth Steel Co. and Central Iron & Steel Co. Prices are general at 1.85c, c.i.f.

No structural shape awards of importance were let. Bids were opened on 1500 tons for the county jail at San Francisco. The general contract for the Valverde and Bernasconi tunnels for the metropolitan water district, Los Angeles, has been placed and the district will furnish 375 tons of steel for the project. This district has also opened bids on 100 tons for three substations and will open bids May 22 for 162 tons for the Eagle Mountain, Hayfield and Mecca Pass tunnels. Price is steady.

Los Angeles has opened bids on 250 tons of copper wire and on 546,750 feet of lead-covered cable. The Metropolitan Water District awarded 12 lead battery locomotives to Whitcomb Locomotive Co. at $76,944; 102 steel body 5-cubic yard dump cars to Concrete Machinery & Supply Co. at $28,662; two 1½-cubic yard power shovels to Harnischfeger Sales Corp. at $23,176 and 4 mucking machines, 50-cubic yards per hour capacity to Goodman Mfg. Co. at $28,500.

Seattle Delays Project

Seattle—No bids were received this week by Seattle for the waterfront seawall improvement, because of financial complications. This project involves over 8000 tons of steel sheet piling, reinforcing steel and cast iron pipe. City officials hope to revise their arrangements so that the improvement may be undertaken shortly. Estimated cost is $1,200,000. About July 1 Seattle will begin a watermain replacement involving about three miles of cast iron pipe, totaling nearly 1400 tons.

Japanese interests, which practically control the export scrap movement on this coast, are shopping for bargains. However, the export price of scrap has firmed from $4.50, gross, to $5. Railroads are unwilling to dispose of their scrap at going prices. Japan is paying about $9 to $9.25, c.i.f., for scrap rails 50 pounds or heavier and $8.50 for lighter. Shanghai interests are in the market for scrap steamers, paying about $40,000, delivered, for average sized bottoms. Sellers find it difficult to obtain sufficient revenue to enable them to send their outworn tonnage to the Orient.

Steel in Europe

British Trade Makes Gain as Continent Continues Quiet

London—(*By Cable*)—Increased volume of trade in steel and iron products is reflected by gains in both imports and exports in March. Imports were 96,963 tons, compared with 77,959 tons in February and exports were 154,971 tons in March, compared with 135,619 tons in February.

Progress in revising business in the Middlesbrough district is slow. While foundry iron stocks are low hematite iron stocks are increasing. Railroad contracts are being booked by steelworks. Trade in the Birmingham district was quiet through the Easter vacation period, the automotive steel market being the only bright spot. Domestic demand for galvanized sheets has improved but tin plates are weak.

Trade on the continent is reported as quiet, with Belgium and Luxemburg in need of tonnage. Japan and Italy are buying sheet bars. Germany has a waiting attitude.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 20

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	£ s d
Foundry, 2.50-3.00 Silicon	$11.26	2 18 6	$8.27	1 14 0
Basic bessemer	9.40	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	11.36	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$19.25	5 0 0	$10.71 to $10.95	2 4 0 to 2 5 0
Wire rods, No. 5 gage	28.88	7 10 0	$21.90	4 10 0
FINISHED STEEL				
Standard rails	$29.84	7 15 0	$26.77	5 10 0
Merchant bars	1.12c	6 10 0	.58c	2 12 6
Structural shapes	1.27c	7 7 6	.52c	2 7 0
Plates, †¼ in. or 5 mm.	1.46c	8 10 0	.80c	3 12 6
Sheets, black, 24 gage or 0.5 mm.	1.46c	8 10 0	1.29c	5 17 6
Sheets, gal., 24 gage, corr.	1.81c	10 10 0	1.46c	6 12 6
Bands and strips	1.33c	7 15 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.51c	8 15 0	1.18c	5 7 6
Galvanized wire, base	1.81c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.06c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 3.03	0 15 9	.....	.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$12.03	3 2 6*	$ 8.80	200	$ 9.14	240	$18.01	69
Basic bessemer pig iron	11.36	2 19 0*	7.48	170	6.93	220	19.71	75.50
Furnace coke	25.51	0 13 3	5.28	120	3.47	110	5.02	19.25
Billets	19.25	5 0 0	16.28	370	12.13	385	25.29	96.50
Standard rails	1.42c	8 5 0	1.39c	697	1.61c	1,150	1.56c	132
Merchant bars	1.16c	6 15 0	1.06c	530	.66c	470	1.30c	110
Structural shapes	1.51c	8 15 0	1.10c	550	.66c	470	1.27c	107.50
Plates, †¾-in. or 5 mm.	1.51c	8 15 0	1.36c	680	.84c	600	1.50c	127
Sheets, black	1.63c	9 10 0§	1.70c	850‡	.98c	700‡	1.70c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.02c	11 15 0	2.80c	1,400	1.96c	1,400	4.37c	370
Plain wire	1.51c	8 15 0	2.26c	1,130	1.82c	1,300	2.09c	177
Bands and strips	1.63c	9 10 0	1.00c	500	.95c	675	1.50c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. (a) dd. Middlebrough

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.75c, Conn., for copper

SHEETS	
Yellow brass (high)	11.25
Copper, hot rolled	13.87½
Lead sheets, cut, to jobbers	7.25
Zinc sheets (100-lb. base)	**9.00**
TUBES AND PIPES	
Seamless yellow brass (high)	13.50
Seamless copper	12.62½
RODS	
Yellow brass (high, full turning)	8.75
Naval brass	9.87½
ANODES	
Copper, untrimmed	10.75
WIRE	
Yellow brass (high)	11.25

Old Metals

Dealers' buying prices, cents lb.

NO. 1 COMPOSITION RED BRASS	
New York	2.75 to 3.00
Chicago	2.75 to 3.00
Cleveland	3.00 to 3.50
St. Louis	2.50
HEAVY YELLOW BRASS	
New York	2.00 to 2.25
HEAVY COPPER AND WIRE	
New York	4.00 to 4.25
Chicago, No. 1	3.75 to 4.00
Cleveland	3.25 to 3.75
St. Louis	3.00
COMPOSITION BRASS BORINGS	
New York	2.50 to 2.75
YELLOW BRASS TUBING	
Cleveland	2.25 to 2.75
LIGHT COPPER	
New York	3.00 to 3.25
Chicago	2.75 to 3.00
Cleveland	3.00 to 3.25
St. Louis	2.50
LIGHT BRASS	
Chicago	1.50 to 1.75
Cleveland	1.75 to 2.00
St. Louis	1.50
LEAD	
New York	2.12½ to 2.37½
Cleveland	2.00 to 2.50
Chicago	2.00 to 2.25
St. Louis	2.00 to 2.25
ZINC	
New York	1.12½ to 1.25
Cleveland	1.25 to 1.50
Chicago	1.25 to 1.50
St. Louis	1.25 to 1.50
ALUMINUM	
Clippings, new, soft, Cleve.	9.75 to 10.75
Clippings, hard, Cleveland	6.25 to 7.25
Borings, Cleveland	2.75 to 3.75
Mixed cast, Cleveland	4.50 to 5.50
Mixed cast, St. Louis	4.25 to 4.50

Secondary Metals

Brass ingot, 85-5-5-5	6.25
Remelt aluminum No. 12	9.00 to 10.00

Metals

Copper, Lead, Zinc, Tin and Other Metals Carried Higher by Inflationary Move

New York—Nonferrous metals advanced rapidly during the past week as the government took definite steps to effect controlled inflation with accompanying higher levels for commodities. The dollar depreciated rapidly but recovered somewhat late in the week as reports became current that France, Holland and Switzerland also would abandon the gold standard.

Copper — Electrolytic metal advanced to 6.25c, Connecticut, by the end of the week with sellers reluctant to take business on this basis. Consumer buying continued relatively light with most of the sales booked for second quarter positions. The advancing market brought out considerable speculative interest but this was not encouraged since second-hands have repeatedly been responsible for undermining the price position of the market. Lake copper advanced in line with electrolytic as did casting metal. Copper wire, brass ingot and old metals also advanced but copper and brass rolled products remained on the previous basis of 5.75c for copper.

Lead—Quotations were advanced $5 a ton further to the bases of 3.50c, New York, and 3.37½c, St. Louis. Buying was in good volume with April requirements of consumers now well covered as well as 50 per cent of those for May. Current curtailment is expected to result in material improvement of the statistical position despite the further increase in stocks during March. Lead sheet and pipe were advanced ¼-cent and ½-cent, respectively.

Zinc—Prices shot up approximately $13 a ton during the week to the basis of 3.75c, East St. Louis. Buying was in better volume but not all sellers were willing to take business. High-grade zinc also advanced for the first time in several months. The advance in galvanized sheets and curtailment of ore output supported the market.

Tin—Prices advanced rapidly during the week with the skyrocketing of the exchange rate on sterling. Straits metal sold at 30.00c a pound Thursday for the first time in nearly two years. The market was less buoyant Friday with an easing in the sterling rate.

Antimony — Prices moved upward on light buying in sympathy with the advance in other metals.

Aluminum—Virgin aluminum was quiet and unchanged but remelt rose 1 cent a pound to 9.00c to 10.00c.

Quicksilver Firmer

New York—Quicksilver prices are firmer. Sellers are reluctant to quote in view of the rising trend in 3 commodities. The market is nominal at $54 to $55, a virgin flask of 76 pounds in small lots.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Comercial xylol	0.26

Per Pound at Producers' Plants in 250-Pounds Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.10

Homestead Valve Mfg. Co. Inc., Corapolis, Pa., has appointed C. Kirk Hillman Co., 3201 First street, Seattle, its exclusive representative in Washington for its high-pressure vapor spray machine for cleaning purposes.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper			Straits Tin		Lead	Lead	Zinc	Aluminum	Antimony	Ingot
	Electro., del. Conn.	Lake, del. Midwest	Casting, refinery	New York Spot	New York Futures	N. Y.	East St. L.	St. L.	98-99%	Spot, N. Y.	Nickel
April 15	5.37½	5.50	5.12½	25.85	25.95	3.25	3.12½	3.10	*22.90	5.60	35.00
April 17	5.37½	5.50	5.12½	25.75	25.90	3.25	3.12½	3.10	*22.90	5.60	35.00
April 18	5.37½	5.50	5.12½	26.30	26.60	3.25	3.12½	3.17½	*22.90	5.60	35.00
April 19	5.50	5.62½	5.25	27.75	28.00	3.25	3.12½	3.30	*22.90	5.60	35.00
April 20	6.00	6.12½	5.75	29.25	29.55	3.50	3.37½	3.75	*22.90	6.12½	35.00
April 21	6.25	6.37½	6.00	29.25	29.55	3.50	3.37½	3.75	*22.90	6.12½	35.00

*Nominal quotation. Market range 17.90c to 22.90c.

Here and There in Industry

SCHOLS TOOL & MACHINE CO., Henry Schols proprietor, 321 Lake Michigan drive, Grand Rapids, Mich., has bought from estate of W. D. Rearwin patents, patterns, machines, parts and goodwill of the Rearwin patented sawing and filing machine and will continue its manufacture. These machines have been in production for many years by the late W. D. Rearwin and have wide use in die shops and tool rooms. Additional toolroom equipment will be developed to augment this line.

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Brown & Sharpe Mfg. Co., Providence, R. I., manufacturer of tools and gages, is marking in 1933 the one-hundredth anniversary of its foundation in 1833.

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Doheny Stone Drill Co., Los Angeles, has opened a branch warehouse and service plant at 4300 Calhoun street, Houston, Tex., in charge of S. S. Parker.

□ □ □

Youngstown Sheet & Tube Co., Youngstown, O., is moving its Pittsburgh district sales offices from the eighteenth floor of the Oliver building to the ninth floor of the Gulf building, Pittsburgh.

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Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., has moved its Philadelphia office to the Niles plant, Mifflin street, east of Front street. Its New York office will be moved May 1 to 111 Broadway.

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Reliance Electric & Engineering Co., Cleveland, has appointed W. W. Spanagel district manager in the Cleveland territory, a position in which he has been acting for several months.

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A. D. Darragh & Co., 17 Battery place, New York, have been appointed representatives in the New York district for the sale of Z metal castings manufactured by the Arcade Malleable Iron Co., Worcester, Mass.

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Wyckoff Drawn Steel Co., Frick building, Pittsburgh, is moving its general offices to Ambridge, Pa., effective April 24. The mailing address is now P. O. Box 594, Ambridge, Pa. The Wyckoff Drawn Steel Co.'s mill is at Ambridge.

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Fowler & Union Horse Nail Co., Buffalo, has been placed in the hands of Carlos H. French and Frank W. Sherwood, receivers, by order of the federal court. Mr. French has been general manager of the company. With assets of $1,000,000, the petition states, the company lacks cash to pay current liabilities of $52,680.

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Flour City Ornamental Iron Co., Minneapolis, Eugene Tetzlaff president, has acquired the business assets held by the General Bronze Corp., New York, in Minneapolis, and will operate the plant as a subsidiary.

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Edward Valve & Mfg. Co., East Chicago, Ind., is now represented in the District of Columbia by the Dunbar Engineering Co., 601 Thirteenth street, N. W. The office is in charge of P. N. Israel, of the Washington Engineering Co., at that address.

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Pack-Morin Inc. has been formed by Charles Pack and Louis H. Morin, with offices at 261 Fifth avenue, New York. The firm will offer complete engineering service, including chemical, metallurgical and engineering problems.

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Republic Steel Corp., Youngstown, O., has closed its district sales office at Dallas, Tex., and removed it to 2322 Gulf building, Houston, Tex. R. E. Lanier, district sales manager, and his staff, have been transferred to Houston and will have charge of the new office.

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Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., moved its western sales office April 15 from 310 South Michigan avenue, Chicago, to its western plant at Rock Falls, Ill. Foster E. Fike, western sales manager, continues in that capacity with headquarters at Rock Falls.

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American Ball Mill Co., Denver, Rudolph P. Jugel president and inventor, has been organized to market a ball mill for grinding ores, cement, gypsum and other materials. The mills will be manufactured by the Baldwin-Southwark Corp., Philadelphia. Mr. Jugel has headquarters at Philadelphia for the present.

□ □ □

West Leechburg Steel Co., Pittsburgh, is moving its general offices from the eighth floor, Farmers National Bank building, Pittsburgh, to the ninth floor, Union National Bank building, Pittsburgh, effective April 22. West Leechburg Steel has also announced opening of a branch sales office at Dayton, O. Previously, this territory had been covered out of Pittsburgh.

□ □ □

William Laidlaw Inc., Belmont, N. Y., manufacturer of metal-cutting band saws, has been purchased by Leon G. Rogers, Cleveland, and Fred Winterhalter, a former employe of William Laidlaw Inc. A new company has been formed, the name of which is not yet chosen, and officers have been elected. Leon G. Rogers has been made president, Fred Winterhalter vice president and general manager, Pearl Winterhalter treasurer, and Edward N. Conrad secretary. The business will be continued without change of policy or product.

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Quality Products

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critical buyers of iron and steel quality products have placed their confidence in Central

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HARRISBURG, PA.

Construction and Enterprise

New York

NEW YORK—Industrial Plants Corp., New York, auctioneer, will sell at auction April 25 contractors' equipment and supplies of DiMarco & Reimann Inc., subway contractors, 199th street and Jerome avenue, New York. Material includes three Ingersoll-Rand 2874-cubic foot air compressors, air drifters, jacks, rock drills, dump tractors, truck crane, steam shovel and machine shop supplies and equipment.

Pennsylvania

GREENSBURG, PA.—Robert J. Brocker, architect, Greensburg, is preparing plans for figures early in May for remodeling the plant of the Greensburg Brewing Co., three stories, 32 x 75 feet, from a bottling to a brewing plant.

PITTSBURGH—Dravo Contracting Co. has been awarded a contract at $3,136,000 to build a tunnel through the foothills of the San Bernardino mountain range in California. Time limit is 2½ years. The job will require a tonnage of forms, steel reinforcement, piling and structural steel.

Ohio

COLUMBUS, O. — Munkel-Lusch Furnace Co. has been formed by consolidation of the Munkel Heating Co. and Lusch-McDonald Furnace Co. It will occupy the former plant of the Armstrong Furnace Co., Chambers road and Chesapeake & Ohio railroad. The product will be warm air furnaces.

Indiana

FORT WAYNE, IND.—Palamedes Sales Co. Inc. has been incorporated with 1000 shares no par value to manufacture coin-operated amusement and vending machines, by Alfred A. Brown, James Berles and associates.

FORT WAYNE, IND.—Royal Mfg. Co. Inc. has been incorporated with 1000 shares no par value to manufacture water softeners, purifiers, filters and lawn sprinklers, by Ralph C. Dunkelberg, Willard Shambaugh and Ruth A. Sheehan.

INDIANAPOLIS — Indianapolis Screw Products Corp. has been incorporated with $10,000 capital to engage in mechanical production and chemical manufacture, by Charles J. Buchanan, Albert F. Buchanan and Paul H. Buchanan.

Illinois

CHICAGO—L. S. Cohen & Co., 1111 Frank street, has been incorporated with $10,000 capital to manufacture and deal in metals of all kinds, by Sitron & Schwartz, 188 West Randolph street.

CHICAGO—Copper Products Corp. of America, 32 West Randolph street, has been incorporated with $5000 capital to manufacture copper products, by Schwartz & Cooper, 105 West Monroe street.

CHICAGO—Faulds Oven & Equipment Co., 4256 Diversey avenue, has been incorporated with $15,000 capital to manufacture ovens and oven supplies, by Socrates, Davis & Cohen, 111 West Washington, street.

ROCK ISLAND, ILL.—Midland Iron & Steel Corp., 215 Twentieth street, has been incorporated with $25,000 capital to deal in iron and steel and other forms of scrap, by Witter & Walker, Rock Island, Ill.

Southern States

NEW ORLEANS—Huge Tool & Specialty Inc. has been incorporated with $5000 capital, by August F. Huge, president, 2700 Bruxelles street, New Orleans.

OPELOUSAS, LA.—Donald Kemper, New Iberia, La., plans to build an ice and cold-storage plant here for which compressors and refrigerating machinery will be required.

OPELOUSA, LA.—Texas Pipe Line Co. will build a four-inch line 19 miles long from the Opelousas oil field to Livonia, La., with enlargement of existing pumping stations included.

Oklahoma

CHELSEA, OKLA. — Bushyhead Coal Mining Co. has been incorporated with $25,000 capital by L. J. Hisle, president.

TULSA, OKLA. — Smith-Milligan Electric Co., rebuilder of motors and electrical machinery, has moved its shop and office to 808 East Second street, where larger quarters are available for enlarged operations.

Texas

CONROE, TEX.—American Iron & Machine Works, Oklahoma City, Okla., has established a shop here, moving the equipment and machinery formerly maintained in the Oklahoma City oil field. Floyd Craine has been made shop foreman.

HOUSTON, TEX.—North Main Machine & Welding Co. has been established at 2006 North Main street, by Cecil Caldwell and Charles Gadd, owners.

HOUSTON, TEX.—Duraflex Piston Mfg. Co., formerly of Dallas, Tex., has established a plant at 3016 Polk avenue for manufacture of gas engine pistons. L. M. Manley is president.

HOUSTON, TEX.—Continental Can Co., New York, has awarded a contract to J. B. Townsend, Post Dispatch building, Houston, for construction of a factory and warehouse building to cost about $50,000. (Noted March 27).

WICHITA FALLS, TEX.—Plans are being made by engineers for a municipal electric light and power plant and a distributing system. V. R. Smitham is city manager.

Wisconsin

GREEN BAY, WIS.—Henry J. Nelson Machinery Co., 119 North Pearl street, has been awarded a contract for two 250-horsepower water tube boilers for the Weyauwega Dairy Co., Weyauwega, Wis., and one 213-horsepower boiler for the Consolidates Badger Co-Operative milk plant at Shawano, Wis.

MARINETTE, WIS.—M. & M. Box Co., 123 Hosmer street, has let contracts for its box factory, 100 x 200 feet, to cost about $50,000 with equipment, replacing its burned plant. Dan Coffey is general manager.

MILWAUKEE—Moe-Bridges Co., 220 North Broadway, has been awarded a contract at $13,159 to furnish electric lighting fixtures for the new Rufus King high school in Milwaukee.

FT. ATKINSON, WIS.—A. J. Koenig, city manager, closes bids April 25 for construction and equipment of additions to the city sewerage system and waterworks plant. Besides aeration sedimentation equipment seven pumping units are included in the specifications, the entire work to cost about $60,000. Robert Cramer, 647 West Virginia street, Milwaukee, is consulting engineer.

Minnesota

MORRIS, MINN.—Robert J. Torrens, St. Paul, engineer, has been placed in charge of construction of a municipal power plant here to cost $150,000.

Pacific Coast

CLARKSTON, WASH.—Washington Water Power Co. will spend $20,000 improving its waterworks system, including about a mile of replacement of 6 and 8-inch pipe.

SPOKANE—Plans for widening Dishman viaduct jointly by the state and Union Pacific railroad are completed and awaiting approval. Four lanes will be provided instead of three, at a cost of about $75,000.

WILLAPA, WASH.—Residents of the Willapa valley are forming a water district to install a gravity water system, including 12 miles of pipe. Harry Cagley, engineer, Willapa, Wash., is making the survey.

Dominion of Canada

TORONTO, ONT.—Faith Mfg. Co., Chicago, has incorporated a Canadian subsidiary, Faith Mfg. Co. of Canada Ltd., which has leased an entire floor at 490 Wellington street West, Toronto. Equipment will be installed and production started at once of a line of metal products, including plumbing and bathroom fixtures, radiator and tank caps for motor vehicles and a special line of golf clubs, for Canadian and Empire trade.

STATISTICS OF IRON AND STEEL INDUSTRY

Compiled by department of commerce, except: Unfilled tonnage by United States Steel Corp.; foundry equipment orders by Foundry Equipment Manufacturers association; river traffic by United States engineer at Pittsburgh; electric power by department of interior, geological survey

Automobiles

Units Production

1932	—United States— Total*	Passenger cars	Canada Total
Jan.	119,344	98,706	3,731
Feb.	117,413	94,085	5,477
Mar.	118,959	99,325	8,318
April	148,326	120,906	6,810
May	184,295	151,683	8,221
June	183,106	160,103	7,112
July	109,143	94,678	7,472
Aug.	90,325	75,898	4,067
Sept.	84,150	64,735	2,342
Oct.	48,702	35,102	2,923
Nov.	59,557	47,293	2,204
Dec.	107,353	85,858	2,139
Year	1,370,678	1,134,372	60,816
1933			
Jan.	130,114	108,392	3,358
Feb.	106,814	91,340	3,298
2 Mo.	236,928	199,732	6,656
March	.....	.....	.....
3 Mo.	.....	.....	.....

Fabricated Shapes‡

Net Tons

1932	Bookings Tonnage	Per cent of capacity	Shipments Tonnage	Per cent of capacity
Jan.	48,400	12.1	65,600	16.4
Feb.	62,000	15.5	78,000	19.5
Mar.	64,400	16.1	82,400	20.6
April	64,800	16.2	68,400	17.1
May	90,800	22.7	72,400	18.1
June	86,800	21.7	83,200	20.8
July	69,200	17.3	83,600	20.9
Aug.	78,800	19.7	85,00	21.4
Sept.	111,200	27.8	90,800	22.7
Oct.	74,400	18.6	86,400	21.6
Nov.	51,600	12.9	76,000	19.0
Dec.	145,600	36.4	68,800	17.2
Year	948,000	19.8	942,400	19.6
1933				
Jan.	73,608	....	50,894	....
Feb.	50,833	....	45,910	....
2 Mo.	124,491	....	96,804	....
March	.....	.....	.....	.....
3 Mo.	.....	.....	.....	.....

Fabricated Plates

Net Tons Bookings

1932	Total	Oil Storage Tanks	Miscellaneous
Jan.	17,613	4,783	12,124
Feb.	17,755	4,115	11,777
Mar.	12,564	1,161	10,022
April	14,074	1,406	11,167
May	11,788	2,310	9,356
June	18,383	2,808	10,209
July	12,485	3,661	6,586
Aug.	11,916	4,394	6,911
Sept.	11,013	3,753	6,801
Oct.	16,737	5,941	9,528
Nov.	7,873	1,446	6,065
Dec.	9,510	3,154	5,534
Year	161,810	38,976	109,085
1933			
Jan.	11,128	1,501	8,830
Feb.	16,588	8,347	7,660
2 Mo.	27,716	9,848	16,490
March	.....	.....	.....
3 Mo.	.....	.....	.....

Railroad Locomotives

Units Shipments

1932	Domestic	Foreign
Jan.	..	..
Feb.	1	4
Mar.	..	3
April	8	..
May	13	2
June	17	..
July	9	..
Aug.	9	..
Sept.	9	4
Oct.	10	2
Nov.	8	..
Dec.	6	..
Year	80	15
1933		
Jan.	2	..
Feb.	7	..
2 Mo.	9	..
March	2	..
3 Mo.	11	..

Foundry Equipment Order Index†

1932	
Jan.	20.5
Feb.	27.6
Mar.	27.5
April	13.7
May	18.0
June	14.2
July	18.7
Aug.	18.6
Sept.	11.9
Oct.	23.2
Nov.	11.5
Dec.	16.5
Year	....
1933	
Jan.	68.4
Feb.	16.1
2 Mo.	.....
March	.....
3 Mo.	.....

*Difference of total and passenger cars equals number of trucks. †Average monthly shipments, 1922-23-24 taken as 100. ‡Figures by American Institute of Steel Construction, from January, 1933, 75 per cent of industry reporting.

Malleable Castings

Net Tons

1932	Output	Shipments	Orders booked
Jan.	20,399	19,658	20,332
Feb.	19,834	19,432	17,808
March	17,844	19,392	16,235
April	15,461	16,847	16,185
May	16,597	18,075	16,463
June	15,018	16,450	13,330
July	9,447	11,359	8,658
August	6,804	8,631	7,776
Sept.	10,051	9,746	10,582
Oct.	12,274	11,615	12,850
Nov.	13,622	12,745	14,304
Dec.	14,128	14,366	14,504
Year	171,479	178,316	169,027
1933			
Jan.	12,577	14,248	12,404
Feb.	13,432	13,904	11,005
2 Mo.	26,009	28,152	23,409

Steel Castings

Net Tons

1932	Total bookings	Total production
Jan.	17,393	18,395
Feb.	17,015	18,759
March	16,593	20,433
April	12,801	17,474
May	11,342	14,463
June	12,765	12,839
July	9,301	11,460
August	10,147	12,331
Sept.	11,883	11,337
Oct.	11,896	12,480
Nov.	13,235	13,712
Dec.	13,282	13,886
Year	155,837	175,831
1933		
Jan.	12,942	13,951
Feb.	11,857	12,438
2 Mo.	24,799	26,389

Mechanical Stokers

—Sales—

1932	Fire tube boilers	Water tube boilers
Jan.	70	45
Feb.	63	26
March	60	23
April	80	15
May	41	30
June	65	48
July	70	44
August	99	38
Sept.	117	46
Oct.	96	21
Nov.	79	12
Dec.	78	20
Year	920	367
1933		
Jan.	50	13
Feb.	33	22
2 Mo.	83	35

Steel Furniture

Dollars, 000 omitted

1932	Business shipments	Shelving, shipments
Jan.	977	269
Feb.	807	229
March	780	259
April	753	190
May	653	196
June	671	177
July	521	155
August	543	141
Sept.	577	146
Oct.	622	142
Nov.	581	125
Dec.	610	135
Year	8,102	2,166
1933		
Jan.	582	121
Feb.	464	104
2 Mo.	1,046	225

Babbitt Metal

Pounds 000 omitted

1932	(a) Total production	(b) Sales
Jan.	1,743	1,281
Feb.	1,577	1,142
March	1,595	1,188
April	1,419	1,060
May	1,345	947
June	1,319	858
July	1,275	870
August	1,319	994
Sept.	1,406	1,108
Oct.	1,573	1,192
Nov.	1,265	944
Dec.	1,149	823
Year	16,990	12,412
1933		
Jan.	1,346	1,073
Feb.	1,117	917
2 Mo.	2,463	1,990

(a) by 40 plants. (b) by 30 manufacturers who produce for sale, including 5 who also report consumption of own metal.

Unfilled Tonnage

Tons

1932	United States Steel Unfilled orders	Net change	Corp. Per cent change
Jan.	2,648,150	87,203—	3.19—
Feb.	2,545,629	102,521—	3.88—
March	2,472,413	73,216—	2.87—
April	2,326,926	145,487—	5.88—
May	2,177,162	149,764—	6.44—
June	2,034,768	142,394—	6.54—
July	1,966,302	68,466—	3.36—
Aug.	1,969,595	3,293+	0.16+
Sept.	1,985,090	15,495+	0.78+
Oct.	1,977,040	11,950+	0.62+
Nov.	1,968,301	28,739—	1.45—
Dec.	1,958,140	161—	0.01—
Year	.....	...	.....
1933			
Jan.	1,898,644	69,495—	3.50—
Feb.	1,854,200	44,444—	2.30—
2 Mo.	.....	.....	....
March	1,841,002	13,198—	0.70—
3 Mo.	.....	.....	....

Electric Power

Millions Kilowatt Hours

1932	Production*
Jan.	7,543
Feb.	7,002
March	7,302
April	6,779
May	6,635
June	6,549
July	6,531
Aug.	6,743
Sept.	6,735
Oct.	7,054
Nov.	6,944
Dec.	7,142
Year	82,959
1933	
Jan.	6,932
Feb.	6,223
2 Mo.	13,155
March	.....
3 Mo.	....

*For public use

Coke

Net Tons Production

1932	By-Product	Beehive
Jan.	2,100,923	87,900
Feb.	1,995,780	85,800
March	2,089,391	87,400
April	1,883,391	56,000
May	1,742,517	45,000
June	1,536,712	41,200
July	1,523,422	38,200
Aug.	1,473,904	40,700
Sept.	1,544,491	45,700
Oct.	1,738,716	67,600
Nov.	1,751,581	81,400
Dec.	1,786,085	95,600
Year	21,166,913	772,500
1933		
Jan.	1,784,527	81,900
Feb.	1,638,817	84,100
2 Mo.	3,423,334	166,000
March	.....	.....
3 Mo.	.....	.....

Steel Barrels

Units

1932	Production	Shipments
Jan.	359,685	352,135
Feb.	367,472	369,882
March	452,294	453,621
April	447,379	452,191
May	427,299	425,662
June	651,916	654,561
July	352,614	353,336
Aug.	362,993	360,509
Sept.	395,640	398,241
Oct.	422,637	417,490
Nov.	373,190	376,647
Dec.	300,570	307,372
Year	4,920,117	4,928,307
1933		
Jan.	292,201	292,609
Feb.	269,755	272,432
2 Mo.	561,956	565,041
March	.....	.....
3 Mo.	.....	.....

River Traffic

Net Tons

1932	Allegheny	Monongahela	Ohio
Jan.	.....	25,327	45,199
Feb.	2,200	20,089	40,737
March	550	32,234	33,254
April	501	23,849	32,972
May	2,550	23,941	28,267
June	3,611	18,291	27,305
July	1,400	13,677	22,895
Aug.	3,400	26,390	43,621
Sept.	1,200	18,831	28,557
Oct.	21,280	24,305	40,399
Nov.	23,225	29,851	45,735
Dec.	7,200	28,169	30,048
Year	67,117	284,954	418,993
1933			
Jan.	1,627	11,724	18,032
Feb.	1,656	17,904	23,614
2 Mo.	3,283	29,638	41,646
March	425	19,546	32,917
3 Mo.	3,708	49,184	74,533

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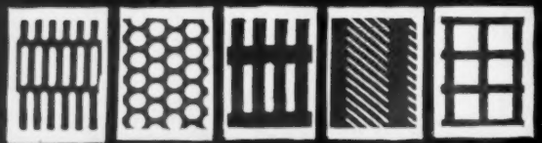

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